THE HYGIENE OF SCHOOL LIFE

RALPH·H·CROWLEY

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BY

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AND HONORARY PHYSICIAN BRADFORD ROYAL INFIRMARY

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TO

THE TEACHERS AND CHILDREN

OF

THE CITY OF BRADFORD

PREFACE

THE object of this work is to discuss the means by which the physical and mental health of school children can, in existing circumstances, be best promoted, and to offer some practical suggestions for dealing with the problems which confront Local Education Authorities, medical officers, managers, and parents in trying to make the School Medical Service of this country as effective and useful as possible.

This book was written while I was Medical Superintendent to the Bradford Education Authority, and the conclusions arrived at and the measures advocated are based on my own practical experience gained among the schools and school children of that city. The views expressed carry, it will be understood, no weight beyond this, and receive no added sanction from the fact that I now hold an official position in the Medical Department of the Board of Education. On receiving that appointment I should personally have wished to withdraw this book from publication, if only to prevent the possibility of questions arising as to inconsistency, real or apparent, between any views expressed in it, and any views or

action which might in the past have been, or in the future might be, adopted officially by the Board of Education. The matter, however, had proceeded so far that this course could not, in fairness to the publishers, be taken.

I must express my indebtedness to colleagues and friends for much help and advice.

RALPH H. CROWLEY

July, 1909

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INTRODUCTION

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MEDICAL Inspection, upon which ultimately is based all that relates to the hygiene of the school and the scholar, was, for the most part, an unheard and unthought-of idea until a few years ago. Though so lately come into prominence, it is no isolated nor arbitrary idea, but is the logical outcome of certain underlying principles which, in the opening century, have been determining action in various directions. The lack of effective relationship between science and practice, due to the aloofness of the one and the mistrust of the other, is on all sides yielding place to a mutual recognition of their interdependence. In particular, we have become more aware that effective action must be based on accurate knowledge and that, in order to realize definite specific results, precise information must be obtained, thus leading up logically to the end in view. This is the root idea of medical inspection.

The centre of social responsibility has shifted from the adult to the child. Progress viewed from the point of view of the former has been halting and in many directions disappointing: the change of the focus to the child has made a vast—an almost incalculable—change in the outlook. Seeming impossibilities find a solution there, optimism replaces pessimism; that the child is father to the man remains no longer a mere empty sentiment, but has become a fact in the recognition of which must be found the groundwork of future social action.

This change of viewpoint, it becomes evident, is a very radical one. Methods of dealing with children will vary greatly according to the standpoint from which the child is viewed, whether, as has been largely the case in the past, chiefly from the standpoint of the adult, or whether attention is primarily given to its own laws of physical and mental development. The view that each child must be considered as an indivisible whole, whose physical, mental and moral development can never be considered apart, the unfolding of whose life therefore must be in harmony with the teaching of physiology and the laws of brain development, forms the theoretic, the scientific call, for medical inspection. This however has not been, directly at any rate, the motive force in bringing about medical inspection. The motive force has been rather the failure, seen on all hands, of the methods of treatment of the child on the former lines, and into the history of the call from this point of view we must enter rather more fully. Before, however, recalling the steps taken in our own country, it will be useful to follow, though in only very brief outline, the history of the movement in continental and other countries, in some of which, as we shall see, greater advance has been made than in our own.

History of Medical Inspection Abroad

It is scarcely possible to state when medical inspection of schools was first inaugurated, or to determine to which country rightly belongs the claim of having first moved in this direction.

Probably the first glimmerings of it are to be found in France, and that as long ago as 1842, when a governmental decree was issued in Paris dealing with the inspection of schools and school children, but the service was very immature and largely voluntary. In 1879, however, a definite system of school inspection was organized in the city of Paris, and the system at present in vogue dates from 1884, though re-organized in 1896. Some degree of medical and sanitary inspection has been obligatory throughout France since 1886.

Sweden goes as far back as France, perhaps further, for there appear to have been medical officers in connection with some of the schools as long ago as between 1830 and 1840. An ordinance prescribing their duties was published in 1863, the inspection at that time being principally connected with the physical exercises, and physicians were appointed to determine the physical fitness of scholars to undertake the exercises and to determine modifications necessary in individual cases. By 1868, according to Doctor Med. Gottfried Törnell, all the public schools in the Kingdom had medical officers attached to them, and in the school codes of 1878 and 1892 medical inspection was further defined and extended. The system now in force is governed by the school code of 1905.

Belgium was early in the field, since Brussels appointed school physicians in 1874, and quickly followed these up by the appointment of specialists. The movement in Brussels soon spread to other Belgian towns.

The first school doctor in Germany was appointed in 1883 at Frankfurt-am-Main, and to Germany must probably be given the credit of having first had, in full working order, a system of medical inspection of a comparatively complete type. Such was established in Wiesbaden by 1896, and medical inspection to-day is largely modelled on the plan worked out in much detail in that city. Between 1890 and 1900 the movement spread widely throughout Germany.

Hungary was early in the field, and school physicians with wide functions were required to be appointed by law in 1887. A year later saw their appointment in Russia, viz. at Moscow, where the system rapidly developed and came to include some measure of treatment, as well as that of the inspection of children.

Since 1890 the movement has become very general. Norway followed suit in 1891, as did our own country, as we shall see later ; Switzerland in 1894, where at Zurich and elsewhere efficient systems were quickly evolved. The United States of America entered the field in 1894, medical inspection being inaugurated during that year in the city of Boston, chiefly, however, from the point of view of the prevention of infectious diseases. The movement has gradually spread throughout the States, taking root in Chicago in 1895, and in New York in 1897. The legislature of Massachusetts was the first to make a system of medical inspection compulsory throughout a State. In 1908 outside the State of Massachusetts there were some seventy cities with some form of medical inspection, though it would appear that in many of these the system was only in a very immature condition.*

Mention may be made further of Roumania, where

* "Medical Inspection of Schools," Luther H. Gulick, M.D., and Leonard P. Ayres. New York, 1908.

medical inspection was instituted in 1899, provision being made throughout the country for the annual inspection of the children, and for the supervision of the school buildings and all that concerns the health of the children generally.

Medical inspection has not, however, been confined to Europe and America. Japan, as one would expect, quickly saw the advantages of it, and the following passage from an account of the system by F. J. Haskin, quoted by Gulick and Ayres in their book already referred to, is worth reproducing :—

"The Japanese system of medical inspection extends all over the Empire, and reaches the most remote rural community. The Japanese Department of Education is able to tell how many children are in school in the Empire, how many are robust, medium, or weak, how many have defective eyesight, and what diseases are most frequent at different ages of school life."

Among other countries which may be more especially mentioned are the Argentine Republic, where a particularly efficient and varied system appears to be in force, and Egypt, where, at Cairo, a school physician was appointed so long ago as 1882.

History of Medical Inspection in England

The year 1903 will always remain a memorable one in the annals of Medical Inspection of School Children, the year of the publication of the Report of the Royal Commission on Physical Training (Scotland). The statistics published in that Report, showing, as they did, a deplorable condition of affairs in regard to the physique of a large number of school children, were largely responsible for the appointment at the latter part of the same year of the Interdepartmental Committee

on Physical Deterioration, which reported in 1904. These two Reports greatly stirred the public mind, and of the results which have followed their publication we shall presently speak. The need, however, for medical inspection had been felt in a few localities prior to this date, the London School Board having appointed a medical officer in 1891, while in the provinces Bradford led the way in 1893, when Dr. James Kerr was appointed Medical Superintendent under the then School Board. This action was not followed up by any other Authorities, except, in some degree, by Salford and Halifax in 1898, until the commencement of the new century. With the passing of the Education Act, 1902, a considerable number of appointments was made, and at the time of the publication of the Report of the Interdepartmental Committee on Medical Inspection and Feeding of Children attending Public Elementary Schools (November, 1905) medical officers for educational purposes had been appointed by six Counties, thirty-five County Boroughs, thirty-one Boroughs, and thirteen Urban Districts, *i.e.* by seventy-nine Authorities in all, out of a total of three hundred and thirty-six, in England and Wales. In the majority of these cases, however, the work allotted to the medical officer was of an extremely limited nature, amounting only, for instance, to the examination of children unfit to attend school, or to the examination of mentally defective children. In connection with this latter point, it may be noted that the Elementary Education (Defective and Epileptic) Act, 1899, and to a less degree the Elementary Education (Blind and Deaf) Act, 1893, did a considerable amount indirectly to help on the cause of medical inspection by bringing medical men into contact with educational aims and methods.

It was, however, the passing of the Education (Administrative Provisions) Act, in August, 1907,

making compulsory a system of medical inspection of children in Public Elementary Schools by every Local Education Authority, which has been responsible for so great a change coming over the scene. In September, 1907, on the establishment of the medical department of the Board of Education, Dr. George Newman was appointed Chief Medical Officer, and this action was followed in November of the same year by the issue of a Memorandum on Medical Inspection (Circular 576). This document served as the Board's practical interpretation of Clause 13 (1) (*b*) of the Act, which ran as follows :—

"The powers and duties of a local education authority under Part III. of the Education Act, 1902, shall include—

"[(*a*) Power to provide for children attending public elementary schools, vacation schools, vacation classes, play centres, etc.]

"(*b*) The duty to provide for the medical inspection of children immediately before or at the time of or as soon as possible after their admission to a public elementary school, and on such other occasions as the Board of Education direct, and the power to make such arrangements as may be sanctioned by the Board of Education for attending to the health and physical condition of the children educated in public elementary schools :—

"Provided that in any exercise of powers under this section the local education authority may encourage and assist the establishment or continuance of voluntary agencies and associate with itself representatives of voluntary associations for the purpose."

The importance of this Memorandum, laying down as it did the principles upon which it was intended medical inspection should proceed in England, cannot well be over-estimated. Medical Inspection was placed in a broad and vigorous setting, and the unity of the life of the child, its home life and surroundings, its school

life and after-life, formed the pivot around which it was shown that the whole subject should turn. This oneness of the different aspects of the child's life led to the emphasis laid by the Memorandum on the necessity for the co-ordination of all the influences brought to bear from the outside upon its development, and, accordingly, prominence was given to the fact that School Hygiene must be looked upon, not as a separate entity and organized independently of other branches of the public health service, but as being an integral part of and closely linked up to that service.

As the groundwork, as the foundation upon which any developments in School Hygiene could be satisfactorily evolved, the Memorandum made it incumbent upon every Local Education Authority to make arrangements for the medical examination of each individual child upon its first admission to a Public Elementary School, and at certain stated intervals during the school life, and the details of this examination will be dealt with fully in a subsequent chapter. Further, in addition to insuring that in this way each child should be medically examined, emphasis was laid on the necessity for insuring also that defects found should be remedied ; this aspect of the subject also we shall deal with fully in a subsequent chapter. Following this Memorandum, action has been taken all over the country, and during Code Year 1908–9 all the three hundred and twenty-eight Local Education Authorities had made arrangements to comply with the requirements of the new law.

It cannot, perhaps, be too clearly recognized that all that has been done, so far—and it is great—is largely of a preliminary nature only. The intention has evidently been to lay broad and sure the foundations. The necessity, so clearly demonstrated, for linking up all the forces which, from one point of view or another, are

brought to bear in the interests of Public Health must not hide from us how, in many directions, School Hygiene, upon the study of which all education worthy of the name must be based, is a specialized branch of study, and calls for conditions allowing for its full development. For this development, however, the foundation already laid clearly allows.

The School Medical Officer

The work of the School Medical Officer is, then, it is clear, of an important and far-reaching character. In this introductory chapter we may, with advantage, consider in outline what is the scope of his work, and what are the duties entrusted to him. The full discussion of these points will be found in subsequent chapters. There is, in the first place, as we have seen, the work which forms the basis of all the rest of the work, viz. the inspection of the individual child. He will examine all children on their admission to school, and at stated intervals during their school life. Such of these children as present any defects and disabilities necessitating treatment or conditions which need watching he will need to reinspect at such intervals and with such frequency as each case demands. In addition, also, to the periodic examinations of individual children, he will pay visits to the schools at intervals of two or three months to inquire into the school surroundings of the child, and to examine any children especially brought to his notice by the teacher. Should infectious disease break out, frequent —it may be daily—visits will be necessitated, especially, for example, in the case of diphtheria. Further, and still coming under the head of inspection, he will, from time to time, need to examine individual children who are absent from school, and alleged to be prevented from

attending by illness. With all the details and problems connected with the school building he will need to make himself familiar, alike with the larger problems of the planning of schools, their ventilation, heating, and so forth, as with the details, such as the arrangements in the cloak rooms, the colour of the walls, etc.

But further duties, of a somewhat different character, will also fall upon the School Medical Officer. He will, for instance, need to make himself familiar with all the difficult problems of education, bringing the teaching of physiology to bear on the curriculum, and seeing that so far as possible this is adapted to the needs of the individual child. All schools for special groups of school children, such as schools for mentally and physically defective children, of all types, including open-air and country schools, will come under his supervision. Another branch of his work will involve the giving of lectures on School Hygiene to the teachers, more particularly during their period of training, while there will fall to his lot also, from time to time, the medical examination, on behalf of the Education Authority, of the school teachers and other officers, to determine their fitness or otherwise for their work. Many special inquiries and investigations will also continually suggest themselves to him, inquiries and investigations bearing on the actual condition of the child, on its relation both to its home and to its school surroundings, and, in addition, there is a vast field for study in the physio-psychological problems connected with the school curriculum and the education of the child generally. Further, the treatment of the child, from one and another point of view, will also deeply concern him; what form and extent this should take we shall discuss at a later stage. In fine, the School Medical Officer must be, or must equip himself to become, in the words of Circular 596 issued by the Board of

Education, "not merely a functionary charged with specific duties," but a "pervading influence," making himself master of the various difficult problems of child-development, all of which have their roots deep down in physiological law.

With the detailed arrangements for carrying out the above duties we are not in this chapter concerned. Enough has been said to show that Medical Inspection and all that it involves, and the School Medical Service which is the instrument for carrying it into effect, have a part to play now and in the future, the importance of which can hardly be over-estimated. It is a Service which stands out clear and well defined, demanding of the medical profession men and women of the highest qualifications and attainments which that profession can produce. While essentially a Department of the Public Health which can allow itself in no way to be looked upon as a subsidiary department, it is, nevertheless, a department which can never know its own full development unless it recognizes itself as a part of the whole Public Health Service of the country, and links itself up and has an organic relation with that Service.

CHAPTER II

THE PHYSICAL CONDITION OF THE CHILD

General considerations—Clothing—Cleanliness—Nutrition—Height and weight.

THAT the physical condition of the child should be perfect, that all the forces which insure this physical perfectness should attend the child from its day of birth, indeed, from its prenatal days, onwards through infancy and the years of school life, seems clearly a child's incontestable right. How frequently this right has been unrecognized, and how great and far-reaching have been the evil consequences, has been of late increasingly apparent. The evidence of deplorable physique in the person of the child, and subsequently in that of the adult, has been there all along, but the condition has been looked upon as inevitable, as part of the natural and necessary order of things and, except in its grossest forms, so far as modern civilization is concerned, has attracted no particular attention. The newer views and outlook upon life which this opening century has brought, the increased development of social consciousness and of communal responsibility, together with the publication of the results of investigations by various observers, have, however, served to arouse and even to alarm the public. In addition, the great fact is steadily becoming admitted that these conditions of bad physique are the result of causes, complex it is true, but still clear

cut, of causes capable of removal and therefore to be removed.

It must be our purpose therefore in this chapter to make ourselves familiar with the physical condition of our children so far as space and available evidence will permit; in the near future, thanks to the development of medical inspection, a much more complete picture will be possible.

We shall consider first the more external conditions, such as clothing and cleanliness, since these introduce us in a graphic way to the consideration of the child's physique and bear often an intimate relation to it. We shall then discuss the problem of nutrition and facts connected with the measurement of Height and Weight. Defects and diseases will be considered in relation to the child as a school child; first the more special defects, such as those, for example, connected with Hearing and Vision; and then the more general, such as Anæmia and Tuberculosis. Lastly, Parasitic Diseases will be considered. Following this must come a discussion of some of the underlying causes of these various defects and diseases, of such subjects as heredity, home surroundings as affecting infancy in particular, and of such factors as food, air and sleep. Only after that shall we be in a position to deal with remedial measures.

The Clothing of the Child

The condition of the clothing of the child reveals much. In the poorer quarters of our cities and towns, and more especially in the large manufacturing centres, the condition is a deplorable one, and this fact is greatly emphasized when an examination is made also of the underclothing. It is not merely that the clothing is old and often insufficient, but it frequently is extremely

dirty and necessarily offensive in proportion. An examination by the writer of a large number of city children showed that in the schools situated in the better-class districts nearly one-fifth of the children had clothing classed as "bad" or "very bad," while the percentage rose to over three-fifths in the schools of the poorer districts. The same tale is told on an examination of the footgear. Judging this by its power of keeping out wet, it was found that it could be classified as "good" in about three-fifths of the children in the better-class schools, and in about one-third of those in the poorest. Something like one in three of the children in the latter schools wore footgear of a wretched description, and in no way at all answering the purpose for which it was worn.

The Cleanliness of the Child

The cleanliness of the child is another external condition of much significance. Basing an estimate on the examination referred to above, it seemed impossible to escape the conclusion that about one-quarter of the children in the public elementary schools of the same city were more or less dirty and in need of a hot bath. Similarly the condition of the heads of the children revealed a very disagreeable state of affairs, a verminous condition having been found in every other child in some of the poorer schools. Such general statements as the above in regard to the external condition of the school population will probably apply approximately, and sometimes indeed, in greater degree, to all the larger and more dirty manufacturing towns. The statistics from places where the slums are fewer and the town cleaner, show, as one would expect, a more satisfactory condition of things.

The Nutrition of the Child

Following these external conditions the next most striking thing about a child is the condition of its nutrition. An estimate of this for practical purposes is of considerable value, though to classify children according to the state of their nutrition is by no means an easy task. We all know when we see the well-nourished child, the "picture of health;" so too we cannot be deceived in the miserably underfed, anæmic child; but between these extremes there are all grades and varieties, and much care is needed in the drawing of inferences in any given case. When large numbers of children are examined, however, useful indications are given, and valuable comparisons can be established.

There are many points which have to be taken note of when estimating nutrition. Good nutrition is not synonymous with stoutness, nor bad nutrition with thinness, though, at the same time, the majority of children who are well nourished are children also who are well up to the standard as regards weight, while the majority of children poorly nourished are proportionately below the standard. It is clear, however, that a flabby, rickety child may be above the standard in regard to weight, and yet be, strictly speaking, of poor nutrition, while a muscular child of slender build may be below the weight standard and yet of good nutrition. Hence it will be seen that the stoutness or thinness of the child must always be very important indications of the nutrition; but they are indications only, and need to be considered in conjunction with other factors. Of these pallor is important, and in marked cases of a peculiar and distinctive quality. It is not the pallor of ordinary anæmia, but the complexion is muddy and sallow. Then the expression is

characteristic; the tendency is for the mouth to be open, the head slightly to droop, the eyes to be dull. The skin is inelastic, the hair lustreless. Mentally there is loss of power of concentration, with either apathy and dejection, or restlessness and superficial sharpness. These children of poor nutrition are very common in the heart of our large cities, presenting the above characteristics in various degrees. The writer's investigations showed that in the schools situated in the poorest districts of Bradford they constituted about one-third of the whole. Mr. Arkle's figures for Liverpool show a considerably higher proportion in similar districts.* Speaking for our large towns generally, it has been said that they constitute approximately ten to fifteen per cent. of the whole school population. The accompanying table, compiled from figures obtained in the writer's investigation previously referred to, shows the distribution of children arranged in accordance with the condition of their nutrition. Group A is composed of children from better-class districts, and group B of those from the poorest.

Nutrition.	Infant School.				Upper School.			
	Group A.		Group B.		Group A.		Group B.	
	No.	P.C.	P.C.	No.	No.	P.C.	P.C.	No.
Good or sufficiently good . .	123	55	31	51	403	68	24	105
Below normal	81	36	35	58	149	25	43	183
Poor or very poor	20	9	34	57	41	7	33	142

The following table, taken from the Report of Mr. Arkle already referred to, shows the same point in

* "Physical Condition of School Children." Paper read at North of England Educational Conference by A. S. Arkle, B.A., M.R.C.S., L.R.C.P., and published in *School Government Chronicle*, January, 1907.

a still more striking manner. Council Schools A represent the best-class Council School; Council Schools B represent a type of school where the parents are mostly of the labouring classes and small shopkeepers. Council Schools C represent schools where children of the poorest classes attend, the parents belonging to the unemployed or casual-labour sections of the community.

	Boys.				Girls.			
	Secondary Schools.	A	B	C	Secondary Schools.	A	B	C
Number . .	366	298	442	286	—	325	383	213
Good (per cent.)	100	80	28·5	10·5	—	91·6	65·7	16·9
Fair ,, ,,	—	17·8	60·1	35·3	—	8·1	33·9	52·5
Poor ,, ,,	—	1·3	9·7	48·6	—	0·0	0·7	28·6
Bad ,, ,,	—	—	0·7	2·4	—	0·0	0·0	1·8

Height and Weight

Height and weight form a very important indication of the physical condition of the child: in drawing inferences, however, many factors have to be taken into account. The value of observations on these two conditions is twofold. They are of value when large numbers of children are examined, since they permit of one group of children under one set of conditions being contrasted with another group under a set of conditions quite different; examples of such comparisons will presently be given. They are of value, too, in the case of the individual child, and this in two ways. First, they allow of his condition as regards height and weight being brought, as to a touchstone, to the average height and weight of children of similar age and sex obtained by the making of large numbers of examinations as mentioned

above. Great deviations from this standard will then lead to a careful examination for the probable causes and an endeavour to ascertain if those causes are natural and unavoidable ones, or whether some remediable defect is pointed to. Secondly, such observations are of value to the individual child in another and more important way, and more especially when repeated examinations are made, since, apart from the value of observations of the absolute height and weight, and of the relation of these the one to the other, much importance and interest centres in the variations in these from time to time, and in the proportions which they respectively bear to each other.

There is, of course, always a steady tendency to increase both in height and weight in the case of the developing child; but this development is not regular, its proportion varies at different ages, and differs much in the two sexes as the accompanying chart shows. The rate varies also according to the season of the year. Apart, however, from these expected and more or less constant variations, there may be changes in one direction or the other which may be indicative of much, and which are indeed danger-signals for the individual which must not be ignored. Sudden increase in height, out of proportion to weight, is one of these, and has much significance from an educational standpoint. Similarly of much importance is gradual loss of weight where previously the gain has been steady, or, should there not be actual loss, failure, at any rate, to gain in a normal way. This sign may be the first to be noticed, for instance, in incipient pulmonary tuberculosis.

Height and weight as absolute factors are strongly contrasted in their significance. Thus, clearly, height is a much less variable quantity than weight, and will not be materially affected by influences acting over a short

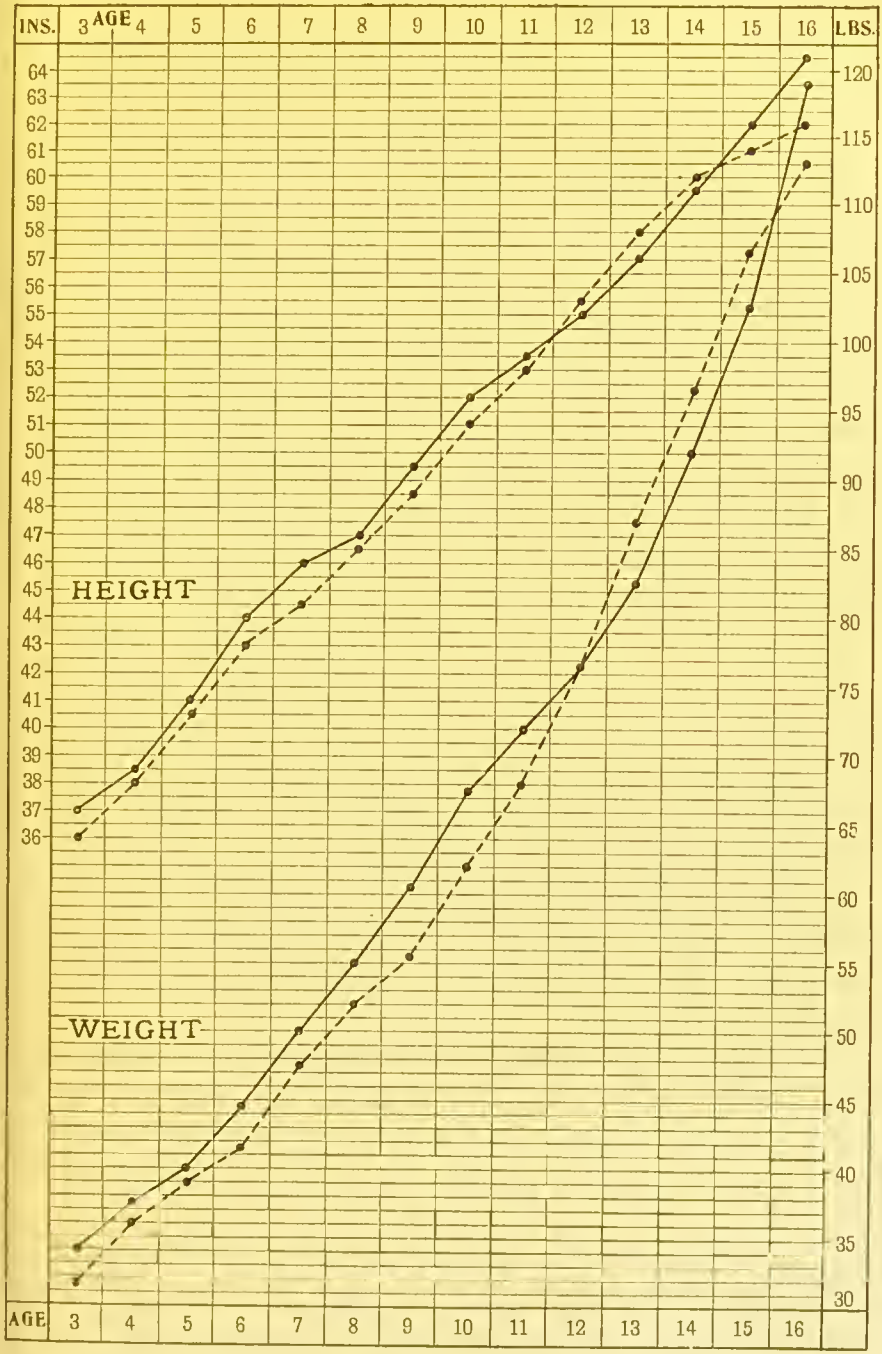


FIG. 1.—Showing average increase in height and weight each year of Boys —— and Girls ..... compiled from the Report of the Anthropometric Committee of the British Association for the Advancement of Science. (1883.)

period of time, whether adverse or favourable; weight, on the other hand, is an extremely sensitive indicator of change in the forces acting on the body. The rapid loss of weight due to a temporary illness and the very rapid gain which will follow the suitable feeding of an underfed child illustrate this.

Thus, in drawing inferences as to physical conditions, we must take into consideration the weight, the height, the relation of these the one to the other, the relation of each to ascertained standards and the progressive changes which take place in each, and in their relation to each other. Moreover, we must remember that the relation of the one to the other must be interpreted in the light of the age of the child. Living under certain adverse conditions it is, nevertheless, possible for a child to maintain an almost satisfactory proportion between its weight and its height, and yet for both of these to be less than they should be; satisfactory external conditions may rapidly stimulate the tardy progress of both of them. The conditions determining height and weight are very numerous, and will be referred to again later. Among such conditions are race and heredity on the one hand, and environment on the other, the latter including prenatal influences, food, rest, activity, fresh air, housing, and so forth.*

Coming now to actual examinations of the height and weight as a means of comparing the physical condition of different groups of children, we find that valuable information can be obtained. In the near future, under

* See "The Medical Inspection of School Children," by W. Leslie Mackenzie, M.A., M.D. (Edinburgh and Glasgow: William Hodge & Co., 1904), in respect to this, as also to many other points relating to the physical condition of school children. Also "Health at School," by Clement Dukes, M.D., B.S. (Lond.) (London: Rivingtons, 1905).

School (Boys) Age	6	6½	7	7½	8	8½	9	9½	10	10½	11	11½	12	12½	13	13½	14	14½	15
Average Height.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.
Secondary Schools	—	3 11	3 11½	4 1¾	4 2½	4 2½	4 4	4 4½	4 6½	4 6¾	4 7½	4 8¾	4 10	4 9½	5 0½	4 11¾	5 1¾	5 3½	5 5½
Council Schools, A	—	—	3 9½	3 10¾	3 11¾	3 11½	4 1¾	4 1¾	4 3¼	4 3¾	4 5	4 6¼	4 7	4 7½	4 9	4 8½	4 10¼	4 8¾	5 2¾
,, ,, B	3 7¼	3 6¾	3 8¾	3 8¼	3 10	3 11¼	4 0	4 1½	4 1¾	4 3	4 3¾	4 4½	4 5½	4 6½	4 6	4 7¼	4 8¼	—	4 7¼
,, ,, C	—	—	3 8	3 10	3 8¼	3 9¼	3 11	4 0	4 0½	4 0¾	4 1¾	4 2¼	4 3½	4 4¼	4 5½	4 6½	4 7¼	—	—
Industrial School .	3 3	—	3 9¼	—	3 10¼	—	3 10¾	—	4 1	—	4 0	—	4 5	—	4 6½	—	—	—	—
Average Weight.	St. lbs.	St. lbs.	St. lbs.	St. lbs.	St. lbs.	St. lbs.	St. lbs.	St. lbs.	St. lbs.	St. lbs.	St. lbs.	St. lbs.	St. lbs.	St. lbs.	St. lbs.	St. lbs.	St. lbs.	St. lbs.	St. lbs.
Secondary Schools	—	3 6	3 7¼	4 0¾	4 0¾	3 10½	4 3½	4 5½	4 10	4 12¾	5 0¼	5 4¾	5 7	5 4	6 4¼	6 1¾	6 10½	7 11	7 10¼
Council Schools, A	—	—	3 2	3 6¾	3 4½	3 5	3 11¼	3 9¼	3 13	4 0½	4 5½	4 6¾	4 10½	4 13	5 3½	5 4¼	5 5¾	5 2¾	6 12¼
,, ,, B	2 9	2 8½	3 1	3 0	3 3½	3 5¼	3 8¾	3 11¼	3 11	4 0½	4 3	4 4¾	4 8	4 11½	4 12¾	4 12½	5 5¾	—	4 9
,, ,, C	—	—	3 1	3 4	3 1¾	3 3¼	3 6½	3 9½	—	3 12½	3 13½	4 2¼	4 6	4 7¾	4 13¼	5 0½	5 1¼	—	—
Industrial School .	2 13	—	3 4¾	—	3 7½	—	3 11½	—	—	—	4 9¾	—	4 12	—	5 3	—	—	—	—

Table from Mr. Arkle's paper, mentioned in the text, showing the height and weight respectively of certain groups of school-children at the ages mentioned.

the new requirement of the medical inspection of school children, much more elaborate and valuable statistics will be available. Perhaps the most striking figures so far prepared are those of Mr. Arkle in his investigation in Liverpool, referred to above. His figures are based on an examination of 2477 children, 366 being drawn from Secondary Schools for boys and 2111 from Primary Schools. The Primary Schools were of three types as already explained, designated "A," "B," and "C." The height and weight of the children was taken without footgear; the boys were weighed stripped to the waist, the girls with all their clothes on. The results are shown in the accompanying table (p. 21), from which it will be seen, as Mr. Arkle points out, that, if the boys of, say, seven years of age are taken there is a difference of 3·8 inches in height, and of 6·3 pounds in weight, between the boys of the Secondary School and those from the Council Schools of the type "C." Similarly if those of eleven years of age are taken there will be found a difference of 5·75 inches in height, and of 1 stone 0·75 pounds in weight; while if boys at the age of fourteen years be compared the difference becomes one of no less than 6·5 inches in height, and of 1 stone 9·25 pounds in weight. To the meaning of these figures and to the inferences which may be drawn from them we shall give some attention when considering broadly causes of defects in physical conditions.

CHAPTER III

THE PHYSICAL CONDITION OF THE CHILD (CONTINUED)

Special defects and diseases—Defective vision—External eye disease—Defective hearing—Adenoids and enlarged tonsils—Ear discharge—Enlarged glands—Defective teeth.

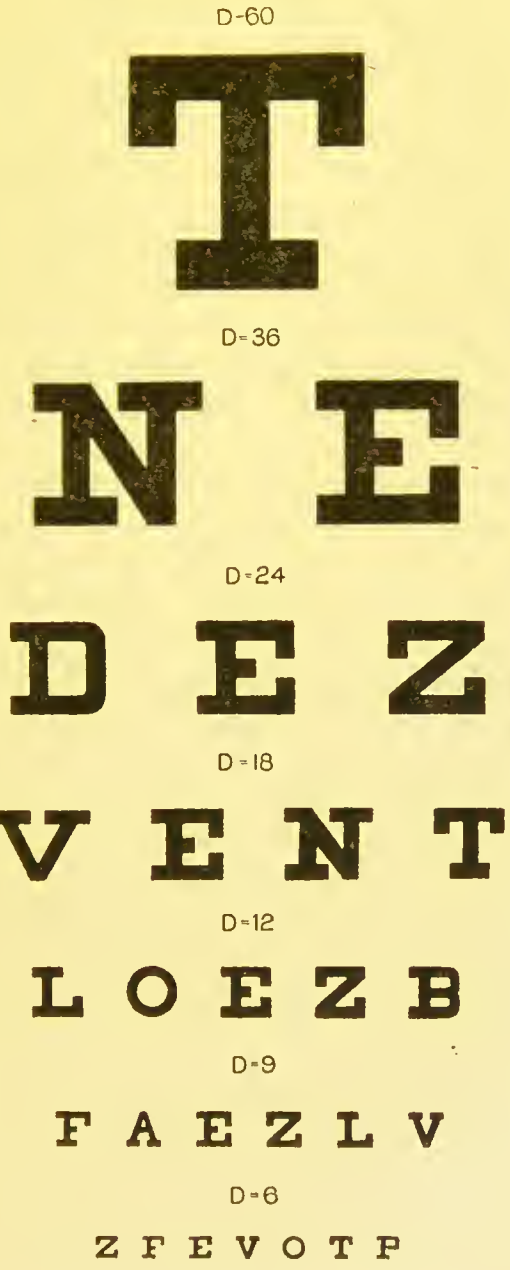
HAVING now obtained a general indication from the appearance, the nutrition and the height and weight of the physical condition, we pass to the consideration of the more common special defects and diseases, and shall lay particular stress on such as have intimate connection with school life. Of these a consideration of Vision Defects may appropriately be taken first.

Defective Vision

Defective vision, it is clear, cannot be other than a serious drawback to the educational progress of the child. It is a condition strangely neglected and its importance is, as a rule, much underestimated by parents and more especially by those less educated. Children may constantly be found in school unable to see the blackboard properly, even from the front row, and yet whose parents refuse to obtain treatment in spite of the fact that their attention has frequently been drawn to the condition, and its serious consequences pointed out.

In estimating the frequency of defective vision it is

important to know what is the degree of defect under consideration, since great discrepancies will be found in statements in regard to the prevalence of defective eyesight among children, simply due to the fact that the word "defective" is used in a different sense by different observers. Of special importance is it to remember that slight apparent visual defects occurring among the older children in the Infants School and among those in Standard I. may not be, strictly speaking, visual defects at all. The failure may be in reality a mental one, a failure to interpret what is seen, the confusion of the letters being psychical, not physical. To form an idea of the prevalence of defective vision it is best to take an arbitrary standard which implies that all children unable to reach it are children who, on account of the defect, are unable fully to benefit from the education they receive. If the eyesight is tested with a Snellen's Test Type, a reproduction of which is given on the opposite page, it is possible to measure the amount of vision defect, if any, which is present, and to express such defect in terms implying greater or less severity. If a normal child stands at a distance of 6 metres (20 feet) from the test card placed in a good light, it should be able to read the bottom line, and should it be capable of doing so the vision is recorded as $\frac{6}{6}$; if, however, it can only read down to the bottom line but one, this means that it is able to read at 6 metres only what it ought to be able to read at 9, and consequently the vision is expressed as $\frac{6}{9}$. Similarly if the fifth, fourth, third, second and first lines only can be read the vision is said to be $\frac{6}{12}$, $\frac{6}{18}$, $\frac{6}{24}$, $\frac{6}{36}$, and $\frac{6}{60}$, respectively. Now any child who can only read correctly the letters down to, and including, the fourth line from the top, *i.e.* whose vision is $\frac{6}{18}$, is a child with "bad" vision. It is true that there are some children, especially in the upper standards, who can read lower than this line and yet


D-60
T
D=36
N E
D=24
D E Z
D=18
V E N T
D=12
L O E Z B
D=9
F A E Z L V
D=6
Z F E V O T P

whose vision must be classified as "bad," while on the other hand there are children in the lower standards who can only read $\frac{6}{18}$, and yet whose vision can hardly be classified as "bad" in the sense in which we are now using the term. Nevertheless, for gaining a sufficiently accurate idea of the number of children who have "bad" vision, it is useful to consider such to be all those who are unable to read $\frac{6}{18}$ and upwards. Many statistics have been published upon this point, and some very complete ones are given by Dr. James Kerr in his report to the London County Council for 1905.* It was found that out of 61,676 children in the London Schools there were 5719 who could only read $\frac{6}{18}$ or worse, *i.e.* just over 9 per cent.

This, then, is the first great fact about children's vision, viz. that, approximately, one child in ten, living under the conditions of city life, is hindered in its school progress by defective vision. Analysing the matter rather more closely, the defect is seen to be more prevalent among girls than among boys. In Dr. Kerr's figures above referred to there were 2603 boys out of a total of 32,013, as against 3116 girls out of a total of 29,663, giving in the case of the boys a percentage of 8·1 with "bad" vision, and in the case of the girls a percentage of 10·5. Pursuing the analysis yet further, we find that "bad" vision is more frequent among the children in the lowest standards and in the highest. This point is brought out in the following table, worked out from Dr. Kerr's Report:—

* Report of Medical Officer (Education) for year ending 31st March, 1905, L.C.C. (P. S. King & Son.)

Age.	Boys with "bad" vision.	Girls with "bad" vision.
7	9·9 per cent.	10·9 per cent.
8	8·5 ,,	9·7 ,,
9	7·5 ,,	9·7 ,,
10	7·3 ,,	10·0 ,,
11	8·0 ,,	10·4 ,,
12	8·3 ,,	10·8 ,,
13 and over	8·9 ,,	11·4 ,,

The more serious defects, those for instance where no letters at all can be read from a distance of 6 metres, or perhaps only the first and second lines, are found in considerably higher proportion among the children of the upper than the lower standards, increasing, according to the same Report, from 1·5 per cent. in Standard I. to 3·5 per cent. in Standard ex-VII.

The next main point of practical interest in connection with vision is to distinguish between the two kinds of defects, that known as *hypermetropia* or long sight, and that known as *myopia* or short sight; these differ considerably in their causation, in their age incidence, and in their seriousness. Both defects imply an inability on the part of the eye to bring the image of the object looked at to a focus on the retina. In the case of hypermetropia the image is focussed behind, in the case of myopia in front of, the retina. Reference to Figs. 2, 3 and 4 (p. 28), will make this plain.

Hypermetropia is a common defect in the case of younger children; in fact, they are normally somewhat hypermetropic, the immature eyeball being too short from before backwards, so that there is always a tendency for a more or less blurred image to be formed on the retina, leading to consequences to which we shall have to refer in a later chapter when speaking of the Infants'

School and Infants' work. This condition of long-sightedness, then, is the one to which most of the

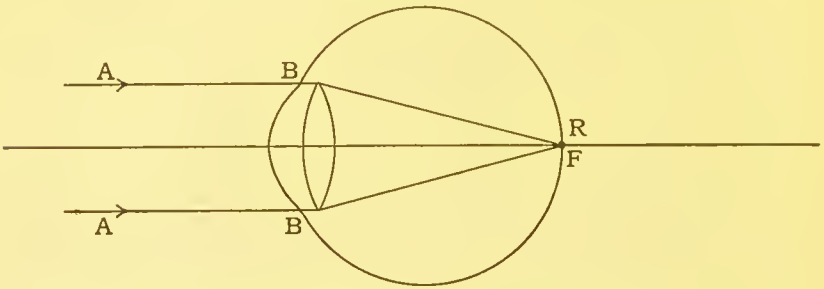


FIG. 2.—Normal Sight (Emmetropia). The parallel rays AB come to a focus F, on the retina R.

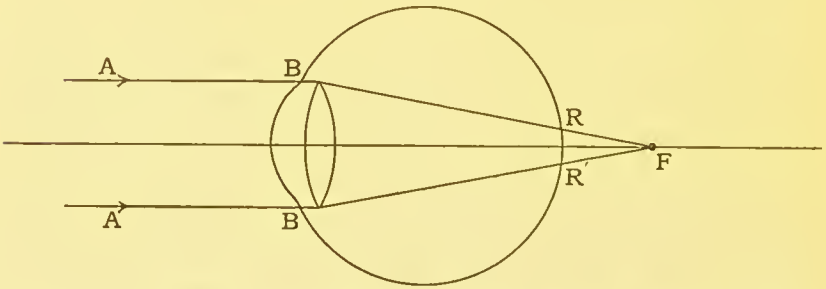


FIG. 3.—Long Sight (Hypermetropia). The parallel rays AB come to a focus beyond the retina at F, causing a blurred image on the retina R, R'.

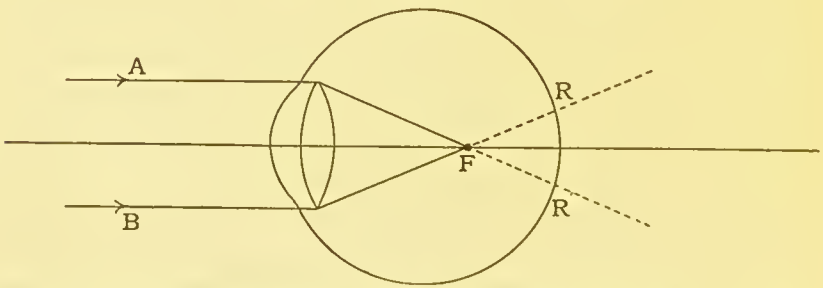


FIG. 4.—Short Sight (Myopia). The parallel rays AB come to a focus in front of the retina at F, causing a blurred image on the retina at R, R'.

slightly defective vision in younger children is due; the more serious defects, also, are for the most part

due to the same cause. The tendency of such cases is towards cure, and even without treatment the majority of the cases of hypermetropia improve as the eyeball develops, the sight becoming normal; this may be true of some even of the more advanced cases. Others, of course, do not so improve, and treatment is needed for all children in whom there is actual difficulty in seeing properly or any evidence of eyestrain, congestion, or soreness of the eyes.

Myopia, on the other hand, is a much more common defect among older children, and tends to progress; to it is largely due the increased percentage of cases of "bad" vision referred to in the table on page 27. It is a condition which should not remain untreated.

In addition to the two forms of defective vision already referred to, there is the condition known as *Astigmatism*, produced by irregular curving of the cornea. As a result of this greater curvature in one meridian than another, the rays of light passing into the eye are irregularly refracted and fail accordingly to meet at one focus. There will clearly be different kinds of astigmatism, according as to whether the eye is, in the vertical and horizontal meridians respectively, emmetropic (*i.e.* where the focus is exactly on the retina), hypermetropic or myopic. In what is known as *mixed astigmatism* there is hypermetropia in one meridian and myopia in the other.

Astigmatism is a common defect, and in some cases, fortunately, of comparatively little consequence, in that no symptoms are produced by it. On the other hand, it may be a defect of most serious import, and is the condition *par excellence* which causes "eyestrain," with its accompanying headaches and poor health generally; the careful and accurate correction of the error of refraction is then called for.

Squint

Squinting or *strabismus* is found very commonly amongst school children. It may be congenital, but this is not usually the case; the condition may, however, date from very early infancy. The causation, which is complex, is well described by Dr. G. Mackay in his article in the "Encyclopædia Medica," in which he says—

"Very few infants squint at birth. Uncertain movements, slight temporary nystagmus, and transient spasms of convergence, are occasionally noticed in the earlier months of life. Strabismus more often appears after the intellectual faculties have expanded sufficiently to allow of a desire for accurate visual impressions. It must be remembered that whatever inherited tendency to harmonious co-ordination of the ocular movements a child may receive from its parents, it must learn for itself to direct its eyes simultaneously to a common point and to maintain binocular fixation upon that point even during movements. . . . If there be perfect symmetry of the orbits, of the ocular muscles and their controlling nerve centres, if the refraction of each eye be similar and the capacity for retinal perception be equally acute, the habit of fusion must be easily acquired. But if one eye has for any reason a difficulty in playing its part in the usual duet, the faculty of fusion may never be properly developed, or may be beyond the possibility of acquisition by that individual; and the eye which is under disadvantage is likely to become a squinting eye. It is interesting further to note that after the fusion faculty has been acquired, it may be lost by disease. Thus it is a common experience that if an eye suffers a serious loss of vision, *e.g.* by the incidence of corneal opacity, or long-standing cataract, or destructive disease of the fundus, it tends to diverge from its fellows."*

* *Strabismus*, "Encyclopædia Medica," 1st ed., vol. xi., p. 473. (Edinburgh: Wm. Green & Sons.)

Hypermetropia, of which we have already spoken, is frequently associated with squint, and both this condition and the squint are aggravated by work at near distance in the Infants' School; and, indeed, in some cases squint is definitely produced by such work, though there is probably always visual defect previously. Of this question of the effects produced by fine and near work we shall speak more fully in a later chapter.

Squint may result as a consequence of illness, and may then be transitory only. Indeed, some children squint, or at any rate squint sufficiently to be noticeable, only when they are run down in health from any cause. A squint is apt to follow diphtheria, being one of the numerous forms of paralysis associated with the disease; it is not, however, permanent.

The vision is almost always defective in the squinting eye; the defect may be of varying degree, from practically complete blindness, when the condition is almost always congenital, to only a slight defect. The vision, however, nearly always tends to deteriorate, and sometimes it does so rapidly, and therefore early treatment, both by means of alteration in the conditions under which work is done, and by the prescription of spectacles or operation, is urgently required. The defective vision associated with squint is sometimes due, not to refractive error principally, but to changes in the fundus, or to former disease of the cornea.

Causation of Defective Eyesight

The causes of defective eyesight are complex, and indeed not by any means finally ascertained. The condition in the vast majority of the cases is an acquired one, though there is evidence that myopia, especially high degrees of myopia, tends to run in families. Defective

eyesight increases in proportion as conditions exist which necessitate near vision; thus, as shown in Fig. 5,

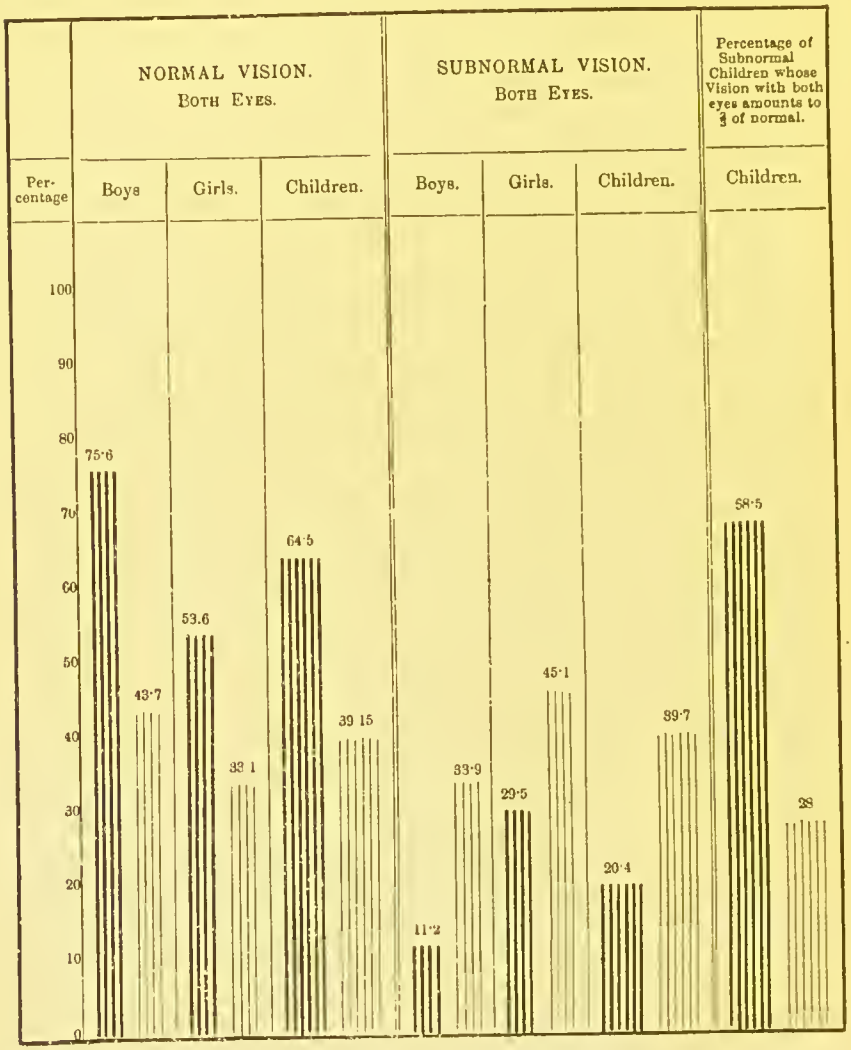


FIG. 5.—Showing percentages for comparison of country (|||) and town (|||) children. From a paper by Dr. J. P. Williams-Freeman. (Wm. Hobbs & Sons, Southampton, 1904.)

there is a deterioration of vision among city children as compared with rural, in passing, that is to say, from

conditions necessitating distant or comparatively distant vision only to those necessitating the continual use of the eye for comparatively near objects. The school is directly responsible for some degree of deterioration of vision, but the way in which it acts is not simple. Undoubtedly the main fault is with the educational methods employed, more especially in the Infants' School; but these faulty methods are clearly seen also in the upper departments and in the Secondary Schools, and in the case of children predisposed to defect escape from the results is impossible. As we shall see, too, later, this injury to the eyesight is but an outward sign, and by no means always the most important one, of much associated evil necessarily bound up with faulty methods of education. Conditions which produce eye-strain tend to produce strain and stress in other directions and, though not infrequently overlooked, the results may be of much more moment than the production merely of physical change in the structure of the eyeball.

All other causes of defective eyesight are really subsidiary to this main one, *i.e.* to the fostering of educational methods which postulate near and strained vision. Among the more important other causes are (1) lack of sufficient light; (2) light falling from the wrong direction and cross lights; (3) a continual strong light in front of the eyes—such a condition as exists where a class faces a window; (4) faulty position of the pupil in relation to the blackboard, a condition which may exist in a room much wider than it is deep, necessitating the viewing of the blackboard from the side; (5) bad illumination of the blackboard, producing a shiny surface in parts; (6) faulty desks and seats, leading of necessity to bad postures, to bending of the head and consequent tendency to congestion; and (7) the condition of the child's general health. It must be remembered, too, that many

of the causes, especially among the older children, obtain in great force at home, where not infrequently they do their lessons, read, write, and sew under extremely bad hygienic conditions, and thus prevention at school is not of itself sufficient.

External Eye Disease

In addition to the vision defects which have been dealt with there are a large number of diseases to which the eye is subject, some of them local diseases, and others a part only of general constitutional disease. Of many of these we shall not need to treat. Some, however, of the more common external diseases will require mention. These fall into two groups, those affecting the eyelids, and those affecting the external parts of the eyeball itself, principally the cornea and conjunctiva.

Blepharitis, or "sore eyes," a chronic inflammatory condition of the eyelids, is common among school children, more especially among the poorer ones, though by no means confined to them. It is, however, a condition which is usually due to neglect, to want of treatment in the earlier stages. Measles is frequently responsible for starting it, but given hygienic surroundings and cleanliness, the disease does not progress. The soil in which it especially thrives is the one found where an ill-nourished, underfed child is brought up among unwholesome surroundings. Pediculosis of the eyelashes may in some cases be responsible for it. Any cause of congestion of the eyeball will much aggravate the condition, such as continuous eyestrain, and defective vision is frequently responsible for its continuance, and in some cases no treatment will cure the disease until the error of refraction has been corrected. The congestion produced by

adenoids may also be responsible for maintaining the condition.

Stye (*i.e.* inflammation of a Meibomian gland or of the connective tissue of the eyelid) is another common form of external eye disease, which, like blepharitis, may occur among all classes, but more commonly is found among children debilitated and ill-nourished; like blepharitis, too, defective vision and the associated eyestrain may be responsible for its occurrence.

Conjunctivitis is found in various forms, including among its acute varieties the *simple conjunctivitis*, commonly known as cold in the eye; the more severe form associated with *phlyctenule*, a small ulcerated patch on the margin of the cornea; the contagious form known in school as *ophthalmia*, a term which, as a matter of fact, is usually used as interchangeable with conjunctivitis. Conjunctivitis is found in more chronic forms also, both as a simple *chronic conjunctivitis*, and as the much more serious and contagious condition known as *trachoma*. All these inflammatory conditions of the conjunctiva are especially found among ill-nourished and debilitated children, though here again defective vision and the associated eyestrain may play a part.

The only other conditions with which we need specially concern ourselves are *affections of the cornea*. These have a very practical bearing on school life, and lead frequently to serious loss of vision, a loss which sometimes persists throughout life. *Corneal ulcers* occur quite frequently, especially among debilitated children, and if neglected will lead to permanent opacities, known, according to their degree of opaqueness, as *corneal nebulæ* or *leucomata*. An infiltration of the cornea, known as *keratitis punctata*, a condition occurring in congenital syphilis, is comparatively common. It is a disease lasting for many months or for a year or two, or even more, but

it tends to disappear. Very serious interference in school work is caused by it, the child being practically in many cases unable to use the eyes for school purposes while the disease lasts. It is associated nearly always with a debilitated condition of health in addition to the specific taint.

Defective Hearing

Defective hearing, though less common than defective eyesight, forms, when it does occur, quite as serious a drawback to educational progress. There are all grades of the condition from the slightest defect, apparent only when definitely examined for, to complete deafness, which is nearly always of congenital origin, and associated necessarily with dumbness. Defective hearing is more often overlooked than one might expect, and this may happen in even the more severe cases. It is sometimes the unsuspected cause of dulness in a child, or of restlessness and lack of concentration of attention, and may be found, too, to be the underlying cause of backwardness of speech in young children who fail properly to reproduce sounds which they only imperfectly hear.

In regard to the frequency of deafness, this will be found to vary considerably among different classes of children. Judging by a large number of children reported on to the writer by teachers, there may be said to be about 5 per cent. who are sufficiently deaf to be noticed as such by the teacher. There are others, as mentioned above, whose defect has not been recognized, and yet in whom it is sufficient to hinder educational progress, and the whole percentage of children more or less deaf is probably, as Dr. Kerr points out, not far short of 10 per cent. In estimating deafness the same difficulty arises

as has been referred to in the case of the examination of the vision. The psychical element is a very important one, and failure to interpret what is heard, inability to analyse the auditory sensations, which may, as a matter of fact, have been quite normally conveyed, may not be easy to differentiate from the physical condition of deafness.

The partial deafness with which we are now dealing is practically always acquired. The presence of adenoid growths in the naso-pharynx is responsible for the majority of cases, and this condition will need separate attention presently. Middle ear disease, usually the result of one or another of the infectious diseases, is another frequent cause, while obstruction, due to wax or some foreign body in the external auditory canal, accounts for a considerable further number. The testing for the presence of deafness and the examination of the child will be dealt with in the chapter on medical inspection.

Adenoids and Enlarged Tonsils

From the consideration of deafness in school children one passes naturally to that of adenoids and enlarged tonsils, and to the train of symptoms to which these conditions give rise ; for, as we have seen, the connection between the presence of adenoid growths in the naso-pharynx and deafness is a very close one.

The far-reaching consequences of this apparently trifling disease are, as we shall see, great, and the condition is one which calls for more serious consideration than it usually receives either from parents or teachers, or indeed from medical practitioners. At the back of the nose where the nasal passages open into the pharynx there is normally situated glandular material, and the

lymphatic glands found here are no more abnormal than the tonsils or than the glands found in any other part of the body. They become pathological only when they are enlarged, and the enlargement is even then only of importance when sufficiently marked to produce symptoms.

The steps in the production of the disease are simple. Whenever an infant or young child "catches cold," the swelling of the adenoid tissue is a necessary accompaniment of the swelling of the nasal mucous membrane. Repeated attacks of this description, due to the child being brought up in stuffy rooms and unduly coddled, a condition equally common among the more well-to-do as the poor, leave the lymphatic tissue in a state of chronic inflammation. A vicious circle is set up, the child takes cold more readily than ever, and eventually the adenoid growths may become of sufficient size to cause the characteristic symptoms of obstruction.

The general picture presented is very characteristic—the picture of the child with the vacant face, the open mouth, the curiously toned voice, the history of snoring at night, probably deaf, and with perhaps ear or nasal discharge. Adenoids may, however, be present, and may be causing mischief, too, without the child presenting the typical picture. A very few adenoids, for instance—so few that hardly any signs of obstruction are present—may be responsible for deafness or otorrhœa.

But the symptoms due to adenoids are, as we have said, widely spread; they must be followed in more detail. The most obvious is perhaps *mouth breathing*. This, it is true, may occur apart from the presence of adenoids. It has been set up perhaps when the child has had some catarrh of the nasal passages, and consequently some enlargement of the lymphatic tissue at the back of the nose, and this condition may have

subsided, the mouth breathing remaining as a habit. Nevertheless, well-marked and habitual mouth breathing is the most characteristic sign of the presence of adenoids. It is, too, a condition which cannot be treated lightly, for it may lead to serious consequences. Normally, during its passage through the nose the air is both warmed and screened, and thereby purified, the nasal passages being especially adapted to serve these two functions. When mouth breathing is present the air enters the lung at a comparatively low temperature, and tends to act as an irritant to the bronchial mucous membrane. Bronchitis is in this way favoured by mouth breathing, as is also a more or less chronic condition of bronchial catarrh, and in such children recurrent attacks of bronchitis are not at all uncommon each winter. Further, too, mouth-breathing children are more susceptible to infectious disease; and when they do develop any such disease, they are more liable to bronchial and pulmonary complications. Associated, too, with mouth breathing is the condition of dribbling, most marked naturally at night time, when a more or less bloodstained discharge from the mouth is of quite frequent occurrence. Snoring, again, is a common and well-known symptom, and seldom occurs to any extent in a child apart from the presence of adenoids or other cause of nasal obstruction.

As one would expect *nasal discharge* is frequently present. Not only is any secretion normally present prevented from escaping from the posterior nares, but there is set up a chronic catarrh of the mucous membrane of the nose and a consequent frequent rhinitis which shows itself by a continuously "running nose," which in its turn leads to excoriation around the anterior nares and of the upper lip. Bleeding from the nose, too, is a not uncommon symptom.

The *aural* sequelæ are of much importance. Deafness

has already been alluded to ; it occurs in the majority of cases. It may be due simply to blocking of the orifice of the Eustachian tube, the canal which connects the middle ear with the pharynx and the opening of which is exactly at the spot where the adenoid growths most frequently occur. In addition, however, to the mechanical blocking more or less completely of this end of the canal, the mucous membrane of the canal becomes swollen, due to a chronic inflammatory condition leading to thickening of its walls. This inflammatory condition is due to the retention of the normal secretion of the canal, which readily becomes infected with micro-organisms. Then, further, this inflammatory condition may extend and may involve the "middle ear" itself, *i.e.* the small cavity in the temporal bone into which the Eustachian tube opens, and which is shut off from the external auditory canal by the tympanic membrane. Pus is formed, the tympanic membrane becomes inflamed and, giving way, the pus is discharged, producing the condition known as "running ear." To this condition, however, reference will be made later, as also to the serious consequences which may follow it.

The *speech* of children with adenoids is very characteristic. There is, as one would expect, a marked nasal intonation, but in addition to this, in younger children more especially, the speech is thick and indistinct, and the pronunciation defective, due partly no doubt to the partial deafness, but mainly to the defective action of the soft palate, and to the general catarrhal condition of the whole naso-pharynx, which may extend indeed to the larynx itself.

The *mental symptoms* are interesting. In some children no change of any moment is noted, but, speaking generally, a child with well-marked adenoids has a mental condition as characteristic as its facies. There is

a curious quality of mental dulness associated with marked loss of power of concentration, and this condition of hebetude varies also characteristically. In part the condition is due to the associated deafness, but in the main it seems connected with interference with the functions of the frontal lobes of the brain: this is brought about, it has been suggested, by the impeding of the lymphatic circulation in connection with this area. It is interesting further to note in connection with this point how frequently there is a history of headache in children with adenoids. In a large number of cases the writer examined, this symptom was complained of in 55 per cent., in about half of which the condition was cured or partly relieved as the result of operation.*

Not all children, however, with adenoids present this picture of mental dulness. Some are, apparently at any rate, very sharp, of a neurotic type, restless and jerky. Such children sleep badly, toss about in bed, perhaps walk in their sleep. Such a condition may be present quite independently of adenoids, but the conditions favouring the development of this neurotic type of child are those favourable also to the development of adenoids, and the presence of these aggravates the neurotic disposition.

The presence of adenoids is responsible for other conditions to which, however, only passing reference need be made. Among such is a chronic inflammatory condition of the pharynx, and a glance at the throat will sometimes reveal the presence of adenoids at once. Conjunctivitis and blepharitis, as Dr. Kerr and others have pointed out, are associated with adenoids sometimes, and these conditions will not be cured until the adenoids have been first dealt with.

* "Adenoid Vegetations," *Pediatrix*, vol. iii., No. 9.

Ear Discharge

Ear discharge or *otorrhœa* has been referred to in connection with adenoids: it is, however, a condition which may occur quite apart from such cause. It is often much neglected, and the neglect may lead to very serious results. It occurs in about 3 to 5 per cent. of children of all ages. Its most frequent cause is inflammation of the middle ear following one of the infectious diseases, especially measles or scarlet fever; it is caused, too, as we have seen, by the presence of adenoids, and sometimes foreign bodies in the external auditory canal may be responsible for it. It is clearly always a microbic infection, and if treated steadily before it has produced serious mischief, is not usually difficult to cure. It is not infrequently, however, allowed to continue untreated, and more or less extensive caries of the bony wall of the tympanic cavity results. But the mischief does not always stop here. Either by direct implication of the meninges of the brain, due to complete erosion of the bony wall separating the middle ear from the inside of the cranium, or by infection being carried by the venous or lymphatic circulation, meningitis is set up. This may be acute and become general, or it may be more local and produce the symptoms of a localized basal meningitis. The mischief, however, does not always stop at the meninges: the brain itself becomes infected, and a temporo-sphenoidal abscess results. These dangers to life of neglected ear discharge are more common than are usually supposed. The discharge often smells more or less offensively, necessitating exclusion of the child from school.

Enlarged Glands

Enlarged glands are very common in children, not only as part of a general lymphatic disorder, but as indication of some local trouble. Thus the cervical glands may be enlarged in children who have pediculosis, the submaxillary where the teeth are decayed, but apart from so definite a cause the glands of the neck, particularly of the submaxilla, are frequently enlarged, and there is a close association between this condition and enlarged tonsils. The enlargement is really of a protective nature. The glands become swollen because an irritant is conveyed to them by the lymphatics ; they serve to arrest the irritant and to prevent its dissemination. For example, tubercle bacilli reach these glands probably by way of the tonsils or through some abrasion of the mucous membrane of the mouth, and not only cause the characteristic enlargement of the cervical and submaxillary glands, but not unfrequently lead to suppuration in them. The causation of glandular swellings as usually seen is sometimes complex ; it is not unfrequent to find a child with adenoids and enlarged tonsils, with carious teeth, perhaps otorrhœa, and it may be pediculi in the hair, and in such a child there is likely to be well-marked enlargement of both submaxillary and cervical glands.

Defective Teeth *

The slight importance only which, speaking generally, has been attached to this condition in childhood is very striking, and that even by parents who in every other

* See "Diseases of Children's Teeth," R. Denison Pedley, F.R.C.S., L.D.S. Eng. ; "Our Teeth, how Built up, how Destroyed, how Preserved," R. Denison Pedley, F.R.C.S., L.D.S. Eng., and Frank Harrison, M.R.C.S. Eng., L.D.S. Ed.

way are most careful of their children's health. It is all the more remarkable when the large amount of suffering and inconvenience caused to the adult is remembered, but it seems as though there has been a general failure to realize that the conditions found in the adult are largely the result of neglect during childhood.

A large body of statistics is now to hand showing how seriously defective is the condition of children's teeth, and how much the exception it is to find a child, other than a very young one, with a complete set of healthy teeth. Extensive statistics have been collected by the Schools Committee of the British Dental Association, and an examination of the mouths of 10,517 children at the average age of about twelve years showed that only 14·2 per cent. of the children were free from decayed teeth, though the children had not necessarily complete sets of teeth. Moreover, the 10,517 children had 37,105 unsound teeth, approximately one-half of them being temporary and one-half permanent teeth. About one-half of the decayed temporary teeth required filling, while this was required for two-thirds of the permanent teeth. The remaining decayed teeth were so far diseased as to require extraction.

In January, 1909, a "Report on Dental Inspection and Treatment of School Children," was issued by the Borough of Cambridge, being a record of the work done at the Dental Institute for Children.* Elaborate statistics are here given as to the incidence of caries. As showing how widespread the condition is, the Report says—

"The percentage of children with perfectly sound teeth, which in the third and fourth years stood at a little over eleven

* "Report on Dental Inspection and Treatment of School Children for the year October 29, 1907, to October 28, 1908," by George Cunningham and A. W. Gant (Cambridge : 1909).

per cent., had fallen by the sixth and seventh years to two, and by the tenth to the fourteenth years to zero. Similarly, if the temporary teeth be ignored, the percentage of children with perfectly sound permanent teeth at five years is just over sixty-four per cent., dropping at seven years to twenty-four per cent. It then falls more slowly to a little over six in the ninth year, and, after continuing almost stationary until the tenth year, sinks to less than two in the eleventh, and after this remains more or less stationary."

There is, of course, much variety in the degree of dental caries, but it is startling to find how many of the children fall into the class "very bad," *i.e.* have between 9 and 19 permanent teeth carious. One-half of the children by the time they leave school, fall into this category, and the same is the case also in regard to one-quarter of the children at all ages. The accompanying diagram (p. 46), taken from the Report, gives in a very clear manner more detailed information on this point.

The next point of much practical importance relates to the degree of the destruction of the tooth, whether, that is to say, the tooth is "savable" or "unsavable," whether it can be filled or must be extracted. The facts relative to this point are shown very clearly in Fig. 7 (p. 47), taken from the Report in which the clear part of the columns represents sound teeth, the lightly shaded part "savable" teeth, and the darkly shaded part those "unsavable." The height of the column indicates the percentage of children having permanent molars. The crossed shading indicates children who had received treatment.

A recent inspection by Dr. Lewis A. Williams, of 1491 children in Bradford, 743 of whom attended a school situated in a "better-class" district and 748 in two schools in the poorest quarter of the children, tells a similar tale. It is interesting to note, also, that the

teeth of the poorest children were at all ages in a somewhat better condition as regards decay than were those

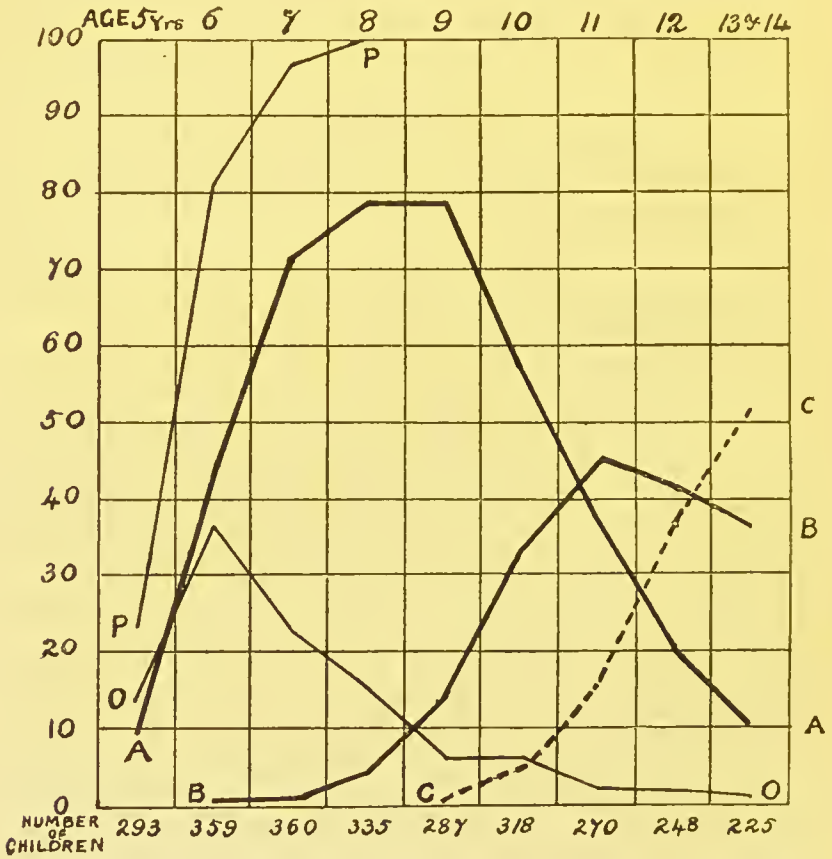


FIG. 6.

P represents the percentage of children with permanent teeth.
O represents the percentage of children with sound permanent teeth (good = no decay or loss).
A represents the percentage of children with 1–4 permanent teeth carious (fair).
B represents the percentage of children with 5–8 permanent teeth carious (bad).
C represents the percentage of children with 9–19 permanent teeth carious (very bad).

of the children attending the school in the "better-class" district. This was especially true of the younger

children, 7·6 per cent. of the poorest children having sound teeth of this age as against 4·7 per cent. of the other group of children.

The causation of caries of the teeth is complex if looked at in its more ultimate aspects—from the point of view, for example, of heredity or of predisposing factors—but its immediate principal causation is the collection about the teeth of the putrefying remnants of

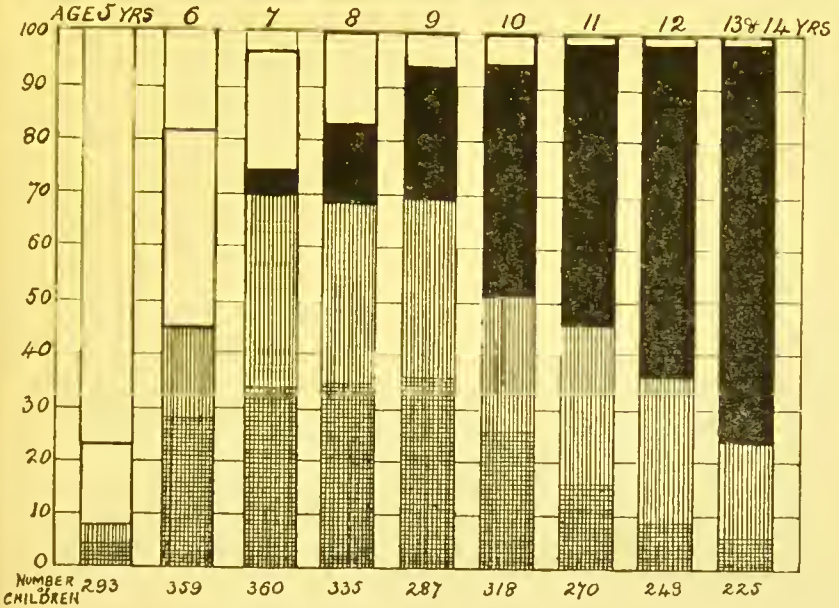


FIG. 7.—For description see text (p. 45).

food. Given this prime factor, it is true some teeth will succumb to this malign influence much more readily than others, and caries having once set in, it will progress much more rapidly in the case of some children than others. Nevertheless, if the teeth were kept clean through childhood and watched for the earliest signs of decay, dental caries would be a comparatively rare disease.

Caries has frequently other conditions associated with it, and indeed almost responsible for it. At Cambridge it was found that more than one-third of the children "had free pus in their mouths, some of which would be swallowed every time food was taken, while other portions of it, thrown out in speaking or singing, would go towards polluting the school atmosphere and lowering the vitality both of children and teachers."

The actual effect produced by all this extensive caries of the teeth and associated conditions has hardly yet been analysed and focussed; it is often difficult to say, when more than one condition is present producing ill-health, what amount of blame can rightly be allotted to any one factor. Some persons and some children have very marked resisting powers, and the lack of evidence of injury to the general health produced by extensive caries in some children is apt to mask the importance which should be attached in other cases to much less extensive disease as the cause of ill-health.

Moreover, some of the ill results of dental caries are subtle and somewhat ill-defined, and as such probably more widely spread than is usually supposed. It is not possible for some children, especially those of a "nervous" temperament, to have so constant a source of local irritation as is represented by carious teeth without having their mental condition seriously influenced, and yet the association between the two may have been entirely overlooked. Digestive disturbances, it is quite clear, are frequently due to carious teeth. In many children the putrid products of the decaying teeth are constantly entering the stomach, and directly or indirectly, through their interference with digestive processes, may be responsible directly or indirectly for such conditions as anæmia, headache, and general lack of robust health.

Further, the inflamed and damaged gum offers a point of entrance for the tubercle bacillus, and that it gains access to the body through this channel there can be but little doubt. It must be remembered, too, that the tubercle bacillus, when it so enters, finds a prepared ground, a system whose resisting powers to disease have been lowered by the absorption of the toxic products already alluded to.

CHAPTER IV

THE PHYSICAL CONDITION OF THE CHILD (CONCLUDED)

General diseases—Heart disease—Chorea—Pulmonary disease ; bronchitis, pulmonary tuberculosis — Rickets — Anæmia — Headache—Diseases of the Skin—Deformities—Causes of defect and disease—Heredity and environment.

LEAVING now the more specific defects and diseases, we may turn to the more general. Any detailed account of these would be unnecessary and out of place. Many have no special connection with school work ; others, however, are of considerable interest and importance to the school medical officer.

Heart Disease

Heart disease is one of these, and it occurs in all stages and degrees of seriousness, from the "functional" conditions, as they are called, in which there is, for example, undue rapidity or slowness, or irregularity of the pulse, to the most severe forms of organic disease with the characteristic physical signs and symptoms. The disease is usually an acquired one, and is nearly always rheumatic in origin. There is, however, in children, frequently no history of an attack of rheumatic fever, and the onset is not unfrequently insidious. Children are sometimes described as "out of sorts," perhaps a little

feverish, with ill-defined pains in the limbs, but the condition is one of which no particular notice is taken. Such an attack, however, may be ushering in the serious disease met with a few years later, and the characteristic "vegetations" are forming in the valves of the heart, which will later lead to their puckering and partial destruction, with all the symptoms dependent on this interference with their function. In a similar way, heart disease may commence to develop during an attack of chorea or St. Vitus' dance, or it may follow scarlet fever.

But heart disease may be congenital, *i.e.* the child is born with some defect in the structure of the heart—for example, in the valves or in the walls dividing its cavities. There may be all degrees of defect of this kind, from slight defects found out only during routine examination to those which produce the typical characteristics and symptoms of congenital heart disease. Such children are stunted in growth, their extremities are blue, their general appearance dusky, and their finger ends bulbous.

The acquired form of the disease, which is more common than the congenital, occurs probably in about 2 per cent. of all school children. It is quite frequently unrecognized, since much damage to the heart may be consistent with the satisfactory performance of its functions, but sooner or later, and sometimes quite suddenly, it fails. In this way serious damage may unwittingly be done through expecting as much from a child affected with heart disease in regard to work, physical exercise, and play as is expected of a healthy child.

Chorea

Closely associated with heart disease in children is the condition known as St. Vitus' dance or *Chorea*.

Each owes its presence in nearly all cases to a common cause—the rheumatic poison ; in many cases rheumatic fever and chorea are found together, in others chorea follows an attack of definite rheumatic fever, while in other cases, again, chorea develops in children already the subject of heart disease. On the other hand, it may occur with no antecedent history of rheumatic fever or affection of the heart, but it may at some future date be followed by other manifestation of rheumatism. Though St. Vitus' dance seems almost always, if not always, to have what one may call a rheumatic setting, nevertheless there are more immediate causes which precipitate an attack. Any form of shock or nerve overstrain may do this in a child predisposed. Chorea takes many forms, from a condition hardly distinguishable from mere fidgetiness to a form so grave that life is endangered. The condition is more serious than is usually allowed ; if unrecognized, and if the child be treated for being fidgety simply, or for careless writing, much harm may be done. Careful watching of these rheumatic children is then, it is evident, imperative, and medical inspection allows of excellent opportunity for doing this.

Bronchitis

Turning now to the lungs, we find two conditions, bronchitis and tuberculosis, of much importance from a school point of view. Attacks of bronchitis are very apt to occur frequently in some children, from babyhood onwards. The disease is practically always due to the unhygienic conditions under which children are often brought up, and these conditions may be found with much frequency among even children of the more well-to-do parents. Undue coddling of children, over-feeding, especially too frequent feeding, lack of fresh air and

overheated rooms, are common causes. Exposure to cold and draughts, so frequently alleged as the cause, act only by precipitating an attack in a child made susceptible, by such adverse conditions, to the disease. As we have seen, it is frequently associated with, and indeed may be said to be indirectly caused by, the presence of adenoid growths. Frequently it has followed measles or whooping cough or other infectious diseases. Bronchitis may take several forms, from merely a catarrhal condition of the larger bronchi, producing but few symptoms other than cough, to a severe form of bronchial pneumonia, which may keep the child in bed for weeks.

Pulmonary Tuberculosis *

Tuberculosis of the lungs in children is a disease of much importance and interest to the school doctor, not only from the point of view of the child affected, but as a communicable disease. Of the onset, detection, progress, and prognosis we have still much to learn. Of the natural history of the disease in children we shall learn much during the next few years in the course of medical inspection. At present our information of, and accordingly our views on the disease, are largely the outcome of hospital experience, and this is frequently and necessarily one-sided and apt to mislead.

The extent of pulmonary tuberculosis among children of course varies very greatly in different localities, but accurate statistics drawn from the examination of large numbers of children are not yet to hand for this country other than from comparatively limited areas. Moreover, the disease is by no means easy of diagnosis, and the

* For full discussion of this subject, see "Tuberculosis in Infancy and Childhood," edited by T. N. Kelynack, M.D., M.R.C.P. (London : Baillière, Tindall & Cox, 1908.)

examination of the sputum is, in children, of but little aid for this purpose; in the very cases where the examination would help there is practically no cough or, if there is, no sputum can be obtained. Dependence on physical signs alone, where they are inextensive, will undoubtedly easily lead one astray: the physical signs of early phthisis in children may be precisely those found in non-tubercular conditions, and in many cases nothing short of carefully watching the child can lead to a correct diagnosis. Crepitations, for instance, at the apex of either lung, with slight impairment of note or percussion, may be found, as Dr. Kerr especially insists, in association with adenoid vegetation, and will clear up on the removal of these. On the other hand, it is most certainly also true that apical tuberculosis in an early stage, a commencing infection perhaps from a neighbouring gland, may give rise to similar slight impairment of note and crepitation, both of which will similarly clear up completely on placing the child under good hygienic conditions.

Tuberculosis in children is no exception to the general rule governing tubercle elsewhere—it tends to become arrested. Statistics in regard to the prevalence of the disease, then, will depend on two conditions, first on the care that is bestowed on the examination of the chest, and, secondly, on the care with which doubtful cases are followed up.

Among 1,670 children reported on by Dr. Kerr in two London schools of a comparatively poor social type, there were eight cases of undoubted pulmonary tuberculosis, and another possible fourteen, making a maximum percentage of 1·3.* Of 3,242 children between the ages of three and six examined during the year 1908 in Bradford twenty-two had undoubted tuberculosis

* Report of Medical Officer (Education) for year ended 31st March, 1907—L.C.C. (P. S. King & Son.)

of the lungs, giving a percentage, *in children of this age period*, of 0·7 per cent. There were, in addition, seven doubtful cases. It seems as though there is, among the school population of a large town or city, nearly 1 per cent. of children suffering from pulmonary tuberculosis. From this point of view it is instructive to note the death rate from this disease in children, as judged from the certified cause of death. In the city of Bradford, for example, for the year 1907, there were 19 deaths from pulmonary tuberculosis occurring in children under fifteen years of age. This is an extremely low figure, if there are, as appears to be the case, approximately 350 children at any given time suffering from the disease. It is clear that either the children die of some intercurrent disease, such as an infectious disease, or else, what is probably frequently the case, are carried off by bronchial pneumonia, the phthisis being unrecognized; or else that a large number of the cases are very chronic or become cured. Time alone will demonstrate the exact truth, but it is clear that there is much of importance yet to learn. This disease, by itself almost, justifies the medical inspection of each individual scholar; only so can many cases —and by no means early ones only—be detected. It is a common observation that children supposed to have consumption, and who are kept away from school for this reason, are quite free from the disease, while others, apparently robust and healthy, are victims.

Other Forms of Tuberculosis

From this special, and from the school point of view by far the most important, form of tubercular infection, we may turn to a brief consideration of other forms of tuberculosis. Tubercular glands are of a special interest, and those of the neck are very commonly affected. It is

in this connection that the enlargement of these glands, already spoken of, associated with adenoids, carious teeth, etc., is of more importance than appears at first sight. The tubercle bacillus seems always to prefer a tissue damaged or devitalized for its growth and development, and the glands in the neck in which the disease develops are probably always predisposed glands. The history of these glands invaded by tubercle varies greatly; the development may be so slight that the discovery post-mortem of a small calcareous focus may be the only witness to the presence of tubercle in the past, a presence unsuspected perhaps at all during life. On the other hand, the gland or glands may become much enlarged, may suppurate, break through the skin, and lead to a more or less continuous discharge from the neck with subsequent characteristic scarring.

Another manifestation of tubercle of special importance is that in which the bones and joints are affected, but further reference will be made to this when speaking of crippled children. Abdominal tuberculosis, under the form of enlarged abdominal glands, tuberculous peritonitis, and ulceration of the bowel, is of special interest to the school doctor on account of the need for early diagnosis; the disease is very insidious in its onset, and frequently has made much headway before its detection. On the other hand, it is especially true of this form of tuberculosis that it tends to cure, and its early detection, a possibility made more easy owing to medical inspection, is especially imperative.

Rickets

Of general diseases rickets is very common, especially in the poorer quarters of our large towns and cities. In the majority of cases, it is the effects of the disease only

which are seen in school: the disease itself is one of early infancy. No one factor can be said to cause it. As in so many other diseases, there is certainly a predisposition to it, *i.e.* some children will never develop rickets, unless under, so to speak, the greatest provocation, while the disease is produced in others when the determining causes seem to be present to perhaps quite insignificant extent.

The most important of these causes is unsuitable food and wrong methods of feeding; other conditions may aggravate the results produced by these, but it is doubtful whether such conditions by themselves ever produce the disease. Broadly speaking, unsuitable food may be defined as any food which, in the case of the infant, is allowed to replace fresh milk, and in the majority of the cases of rickets the child will have been found to have been fed on various proprietary foods or some brand of tinned milk. The method of feeding, too, is very important. Too frequent meals, and meals irregularly given, are additional agents in the production of the disease. Given, then, this prime factor, viz. improper food and methods of feeding, other adverse conditions will accentuate its effect. These may be summed up as unhygienic conditions generally, such as bad housing, stuffy rooms and undue coddling of the child.

The manifestations of the disease are many; its most characteristic form is that in which the bones are specially attacked, producing the well-known conditions of knock-knee and bow-leg. These conditions are really, however, of more importance from an æsthetic point of view, than any other. The less easily seen affection of the ribs, leading to deformity of the chest, is of considerably more importance. Bony changes, however, though so apparent, are not really the most important. The child suffers

from retardation in every direction. It walks late, the teeth are cut late, and, when they do appear, are often of poor quality. Speech is slow in developing, and remains imperfect up to, perhaps, seven and eight years of age, while in general mental power the rickety child may be one to three years behind what it should be for its age. These children, too, often have adenoids and enlarged tonsils, and the effects of these are added to those of the rickets, and so aggravate the latter.

Anæmia

Another constitutional condition of much importance is that of *Anæmia*, so extremely common among school children. It occurs at all ages, from the infant upwards, and has a varied ætiology. The term is commonly used in connection with that form known as chlorosis which is found in young girls; this, however, is quite a distinct variety in every way, and has specific blood changes connected with it. The anæmia so widespread among children in cities and large towns, especially in the more congested parts of them, is directly due to the child's environment. Lack of food and improper food form an important factor, and unhygienic conditions of whatever sort tend to produce it, of which overcrowding is certainly the most important. The anæmia of the young child, too, is largely conditioned by the health of the child as an infant, especially during the first year. Damage is done then which it is very difficult to repair later—damage due principally to improper feeding. But while anæmia is so common among these ill-fed children from overcrowded homes, it is by no means confined to them. The condition may also be produced in children fed unsuitably and too frequently, who are coddled at home and kept in atmospheres too warm and stuffy.

The appearance, however, of the children of these two classes is not the same. The anæmia of the former is associated with an earthy tinge of the skin, and other characteristic signs mentioned when speaking of malnutrition, while that of the latter takes the form simply of pallor, and the skin is often of fine texture. In connection with this, it must be remembered that children who are pale are not necessarily anæmic, while an anæmic child may sometimes present a deceptive amount of colour. Much depends on the texture of the skin and the disposition of the capillaries. Rickets, as one would expect, considering the causation of the disease, is frequently associated with anæmia ; so, too, are enlarged tonsils and adenoids. Rheumatic fever is a constitutional disease in which anæmia is almost always present, and children with any rheumatic tendency—shown for instance by an attack of rheumatic fever, or growing pains merely, or attacks of tonsilitis or chorea—are usually more or less anæmic.

Headache

Anæmia, in whatever form it occurs, is probably nearly always what is known as toxic in origin, *i.e.* there are poisons in the blood influencing adversely the formation of the blood in regard to its various constituents, producing with the altered condition of the blood the symptoms associated with anæmia. Of these headache is an important one, and is more common in the anæmia of young girls than in that due to bad hygienic environment. Headache, speaking generally, is not so common among school children as one might expect, though, on the other hand, there is reason to believe that children suffer more than is sometimes allowed, even by teachers. As we have seen, it

is quite frequently associated with adenoids; it is common, too, among rheumatic children, and children with heart disease. Working under unhygienic conditions in school and overpressure in individual cases may readily cause headache, while eyestrain is a well-known factor in its production. This latter is not really so common, though some cases, especially among the older children, are very definite, and the headache ceases at once on treatment of the cause.

Diseases of the Skin

Diseases of the skin are frequently met with among school children, and may usefully be considered under two headings, those parasitic and those non-parasitic in origin. The latter need not be dealt with at length. *Eczema* presents no special features from the school point of view, though a practical question arises at times as to whether or not a child suffering from the disease should be in school.

Not infrequently the term "eczema" is applied to the very common condition known as *Impetigo*, which usually takes the form of "breakings out" on the face, principally, but which may extend to the head, hands, and indeed all over the body. It is a contagious condition, but one which is readily cured if not neglected. It is more common among children from overcrowded areas, and children poorly nourished.

Psoriasis, a patchy, scaly condition of the skin, and sometimes called eczema by teachers, is a non-infectious condition, and is apt to recur each year.

Lupus, or tuberculosis of the skin, occurs principally on the face, though by no means confined to it. The chief point of interest connected with it is the need for early diagnosis and consequent immediate treatment.

A condition of the skin often called *Lichen Urticatus* is very common in the Infants' School and is sometimes very troublesome to cure. It takes the form of small raised papules, and the irritation is considerable, and when the lesions due to scratching are superimposed on the original disease, a diagnosis of scabies or itch may quite readily but wrongly be made.

Scabies or *Itch* is very contagious, and the diagnosis of a doubtful case is sometimes determined by the fact of another member of the family having a similar complaint. The characteristic seat of the lesion is on the hands and feet, and its appearance is usually typical. It produces much irritation, and in a child of low nutrition and generally ill-cared for, there may be much pustular eruption of the skin, quite masking the original disease. The parasite known as *Acarus Scabiei*, which causes the disease, may be found on searching for it, more especially in one of the characteristic little burrows which are found running under the surface of the skin. As has been mentioned, the diagnosis is not always easy, and one not infrequently comes across cases being treated as eczema, and which fail to get better until the real cause has been ascertained and the appropriate treatment used. Besides being mistaken for eczema, it is also mistaken for lichen urticatus, and cases of this complaint are wrongly, as already stated, labelled as scabies. A right diagnosis is of much importance, both for the child's sake and its fellow scholars.

A somewhat similar skin condition known as *pediculosis corporis* is produced by a verminous condition of the body. This is not, however, so common as is sometimes supposed, even among children from the slum areas; it is evidence of an extremely filthy state of affairs in the home. On the other hand a pustular condition of the head known as *pediculosis capitis* is very

common. It is true that in the majority of cases there are no actual sores of the scalp, though there is every evidence of irritation and consequent scratching; if neglected, however, the scalp may become almost one pustular mass. Some idea of the extent of this form of pediculosis may be gathered from the following figures. Thus in London, prior to the steps which are now taken to lessen the evil, there were found among 36,445 girls, whose heads were examined by the nurse, 12,003 which were verminous, *i.e.* 33 per cent. Similarly, in the city of Bradford, according to the Annual Report for the year ended March 30, 1907, there were in the schools situated in the better class districts 25·7 per cent. of the girls with verminous heads, while in schools in the poorest districts 49·5 per cent. were similarly affected. In neglected children the condition adds distinctly to the many other causes of their debilitated condition; the glands of the neck are considerably swollen, and the irritation and discomfort associated with the irritation of the scalp cannot but produce a deleterious effect on the general health.

Ringworm is a parasitic disease, giving rise to great trouble from the school point of view. It is much more common in some districts than others, and the results of medical inspection will probably reveal some interesting particulars in this, as in so many other directions. Though frequently a disease easy of diagnosis, many cases, more especially those of long standing, are apt to be overlooked, and the condition considered to be simply a scurfy condition of the head. It is these cases which are frequently responsible for the disease spreading, and only much watchfulness on the part of the teacher and systematic medical examination, followed by exclusion of the child and treatment, can lead eventually to the stamping out of the disease. It is more common among

boys than girls, the long and often thick hair of the latter forming a protection to the scalp. It occurs, too, quite as frequently, perhaps, indeed with more frequency, among the clean children as among the more neglected. An early diagnosis and immediate treatment is essential if the disease is ever to be eradicated. A typical case is, of course, readily recognized, but those presenting least the features usually associated with ringworm can still usually be recognized, if looked at carefully, even by a layman. Practically all cases are characterized by the presence of short, stumpy hairs, some of them thicker at the extremity than at the root, and, in what sometimes appear to be merely scurfy conditions of the head, these hairs can be detected pointing to the real nature of the condition. Ringworm of the face or body is a much less serious affair, and readily cured. The duration of that of the scalp varies within very wide limits—from a few months to even several years. This is largely dependent upon the actual variety of the spore present, and is influenced of course by treatment. This point will be referred to in a future chapter.

Favus, another parasitic disease of the scalp, is a very rare disease in this country. It is seldom seen outside London, and even there it is largely confined to the Jewish population, a good many of whom have brought it with them from Russia. It is comparatively common in Scotland. When the disease has once become established it is very resistant to treatment; it never, like Ringworm, tends to cure.

Deformities

Of deformities among school children it will not be necessary to speak; they are conditions often more of interest than of practical importance, and what reference

is made to them will be made when speaking of crippled children. One variety of deformity, however, viz. lateral curvature, stands quite alone and needs separate reference, since it has a close connection with school and school work.

Lateral Curvature of the Spine

This condition is not at all infrequently met with among school children, principally among girls and especially among the older ones, and is found in every degree, from the very slight degree found only upon systematic medical inspection to the more severe form which may be at once apparent on looking at the pupil when in class or which may be severe enough to cause complaint of pain. The lateral curvature met with in this way in the school is nearly always ultimately connected, as regards its causation, with faulty school methods and school equipment. In every case, however, there is a condition predisposing to the development of lateral curvature. Two girls may be exposed to the same adverse influences and one may develop lateral curvature which the other escapes. This predisposition is usually poor health in some degree, and the deformity is seldom found in robust and healthy girls. Unsuitable school furniture is immediately responsible in many instances for its production, and it is aggravated by all unhygienic methods of school life, such as too long school hours, and unsuitable arrangement of the school curriculum. Further, the unsatisfactory conditions under which lessons are often done at home, aid in its production.

Lateral curvature may occur also in quite young children as the result of rickets, or be secondary to other forms of disease, *e.g.* to empyæma (abscess in the pleural cavity), or to inequality in the length of the limbs

or in their strength. Lateral curvature produced by the last-named cause is seen, for instance, associated with infantile palsy or with long-standing hip-joint disease. It is of interest, too, to note that it is intimately connected sometimes with severe forms of nasal obstruction, and is one of the deformities of the chest which may follow the presence of adenoids and enlarged tonsils. Such a mode of production is, however, of rare occurrence.

Causes of Defect and Disease

In this chapter passing reference has several times been made to the causes, to the underlying causes in particular, of defects and diseases ; some further reference to these seems, however, called for. Medical inspection would fulfil but very imperfectly its aim if all that was required was felt to have been accomplished when defects and diseases had been pointed out, even though this should lead to their satisfactory treatment. To emphasize the underlying causes, to show clearly how disease may be prevented, to be the gateway to a healthful childhood, that is the great function of medical inspection. A full discussion of these underlying causes is impossible in the space at our disposal, but they must be indicated and something of their relative importance pointed out.

Heredity

The question of *heredity* is met with at once. It is of the greatest practical importance, and much misconception still exists in regard to its place and power. Its influence in regard to mental and moral characteristics we shall have occasion to refer to later ; here we are concerned only with its relation to the physical condition and to disease.

The general physical condition is clearly much influenced by heredity, and, what amounts to the same thing, by race, in such particulars as the build of the child, the height, the colour of the hair and eyes, the characters of the features, and so on. In some of these heredity holds complete sway, while in others it is modified in its influence by environment. No influence of environment in certain individual instances, however, could ever hide the fact that the child was the child of its parents, even though that influence had much modified the effect of heredity.

This influence of heredity in tending to determine the build of a child in its height and its weight is of much practical importance when inferences come to be drawn from statistics on these points. Thus, where questions of race are involved, fallacies easily arise when comparing groups of children living under different environments, much of the difference being possibly due to the difference in race of the children concerned. Such considerations, for example, hold especially in an area such as London, where two given schools, for instance, may consist of children widely different in race, the London type of English boy and girl in one, and Jews or Italians, it may be, preponderating in another. There are, too, deep-set radical differences in the same nation. Differences in regard to the physical condition due to heredity undoubtedly exist between, for example, the inhabitants of the West Riding of Yorkshire, and those of Cornwall, or of Lancashire, or of London. Heredity, however, probably plays in such instances as these considerably less part than is usually supposed, while environment probably exerts a greater influence than is commonly believed.

Disease, it should be clearly understood, is very rarely inherited. Instances where transmission takes place, or at any rate, appears to take place, in this way, are almost of

academic interest only. Certain rare forms of nervous disease, for instance, and the condition know as Hæmophilia, the subjects of which bleed so readily and seriously on the least provocation as to endanger life, one must class as definitely hereditary diseases, uninfluenced at all by environment. For practical purposes, however, and from the point of view of the physical condition of the school child, heredity, used in its strict and only permissible sense, plays a part of very minor importance. Heredity, however, it must be remembered, is a term often used very loosely, and some conditions apparently due to it are in reality due to environment acting as a prenatal influence. Congenital syphilis, for instance, is of course not an inherited disease ; it is acquired by the child *in utero.*

But though disease is not commonly or largely inherited, it seems clear that this is not true of the predisposition to disease. In the case of consumption and rheumatic fever, for example, it appears certain that there are families, the children of which will develop these diseases respectively on the least provocation, so to speak, while similarly there are families in which these diseases would not develop even though considerable opportunity were given. The children of certain families, that is to say, are more vulnerable, provide a better soil for the bacillus in question to grow in, than is the case with the children of other families. Obviously, then, the prevention of such diseases consists in the main in careful attention being paid to the environment—to the environment from the moment of birth amidst which the child is brought up. The great practical point which clearly emerges in any discussion on heredity is that the wretched physical state of so many of the children in the poorer quarters of our cities and towns is due in no important degree to this factor, but is

practically entirely due to the conditions under which the children live. Similarly the indefinite ill-health and "delicacy" so frequent among the children of the more well-to-do is also due to the unhygienic methods of their upbringing.

Food

Passing, then, to environment as a cause of poor physical condition and disease, we can only glance at some of the more important factors. Of these food is unquestionably the most important. The ill-effects—ill-effects often permanent—of insufficient or too much food, of unsuitable food, of too frequent feeding, especially in the case of the infant, can hardly be exaggerated: probably nine-tenths of the infant mortality among children born healthy is due to improper feeding. Further reference to this subject, so far as school children are concerned, will be made in a future chapter.

Fresh Air

The absence of fresh air and sunlight play the next most important part in the production of bad physique and disease. The ill-effects of overcrowded, ill-ventilated, badly lit rooms are quickly shown in the infant; anæmia, liability to colds and bronchitis, are among the results in addition to the lower resistant power against infectious disease. Among the children of those more comfortably off these ill-effects, and especially liability to adenoids, are frequently seen; the coddling of children, so far from preventing disease, is among the important factors in producing it.

Sleep

Sufficient sleep is a *sine quâ non* of healthful childhood. Too little sleep is a frequent failing among children of all ages and social grades. The chief fault lies in the fact that children go to bed so late ; and of the greater value of sleep during the earlier part of the night there can be no doubt. Moreover, the conditions for healthful sleep are very unsatisfactory in many homes owing to noise and disturbance of one kind or another, and to surroundings unhygienic from many points of view, especially in respect to the foul atmosphere in which many children spend their nights. But apart from the question of actual sleep, conditions allowing of quiet and peacefulness are essential to health during childhood from infancy upwards. Children are not left alone sufficiently, the tendency being unnecessarily to excite them, and in the Infants' School to expect far too much of them.

Reviewing, then, the many unsatisfactory features in the physical condition of the children, there is, at any rate, this one counterbalancing advantage, viz. that nearly all these defects and diseases are due to definitely known, and equally definitely preventible, causes. It remains only for the individual to be fully trained in the elementary principles of hygiene above referred to, and for the community on its part to see that opportunity is given to each such individual for the carrying of these principles into practice.

CHAPTER V

MEDICAL INSPECTION OF THE CHILD IN THE SCHOOL

Objects—Character and degree—Method—Difficulties and objections—Procedure subsequent to inspection—Re-inspection.

IT will be our duty in this chapter to consider in some detail how the medical inspection of school children may best be carried into effect. Before we are in a position to do this, however, we must decide what are the objects of such inspection, for clearly upon the objects in view will depend the character and the amount of the inspection required. We shall for the present place upon one side the inspection of the surroundings of the child in school and confine ourselves to that of the child itself.

Medical inspection, then, may have two objects. First, it may be for statistical purposes, and of this character has been, as a matter of fact, much of the medical inspection in the past. It has been carried out largely in order to show what was the actual physical condition of the child, and in order to establish facts in reference to the alleged bad physique of so many children. This has now been abundantly achieved so far as demonstrating the necessity for systematic medical inspection is concerned. Many important and interesting statistics still await collection, but their object will be of a different nature,

namely to provide data upon which methods of amelioration and prevention can be based. Further, statistics are needed also for the purposes of comparison. When the Interdepartmental Committee on Physical Deterioration endeavoured to ascertain what evidences there were of actual deterioration in physique or the reverse, they found but scant material of a reliable nature to hand. The system of medical inspection now in force will present material for forming sound judgment from decade to decade upon the progress of the nation from the point of view of the health of its children.

But secondly, the chief objective of medical inspection, after all, is the benefit it should bring to the individual child, and the perfectness and satisfactory character of the methods must be judged mainly from this standpoint. When these conditions have been fulfilled it is time enough to consider what further methods may usefully and reasonably be adopted which have in the main a statistical end in view. It is necessary, however, to add that any information obtained for statistical purposes only will almost certainly, sooner or later, be capable of being turned to practical account.

The methods of the inspection of the child in the past have been, as we have already seen, lacking in precision. Even in those cases where it was carried out somewhat thoroughly it was nevertheless more haphazard than otherwise. At the most, children were seen who were presented by the teachers, and perhaps an annual examination of the eyesight made, but for the most part no very determined action was taken in the matter of following such cases up; indeed the medical staff to hand was quite inadequate for detailed work.

The medical inspection of each individual child is, however, now provided for, and that at certain periods of the school life, first on admission to school, secondly

at the age of seven years, thirdly at that of ten, and finally before leaving school. The general lines upon which such examination should proceed were laid down in the memorandum of the Board of Education issued in November, 1907 (Circular 576). The following extract will show its character and extent:—

Character and Degree of Medical Inspection

"From what has been said it will be clear that the fundamental principle of section 13 of the new Act is the Medical Examination and supervision not only of children known, or suspected, to be weakly or ailing, but of all children in the Elementary Schools, with a view to adapting and modifying the system of education to the needs and capacities of the child, securing the early detection of unsuspected defects, checking incipient maladies at their onset, and furnishing the facts which will guide education authorities in relation to physical and mental development during school life. It is evident that —although this work involves, (*a*) medical inspection of school children at regular intervals, (*b*) the oversight of the sanitation of the school buildings, and (*c*) the prevention, as far as may be, of the spread of infectious and contagious diseases, including skin disease—action in these three directions will be incomplete unless (*d*) the personal and home life of the child are also brought under systematic supervision. The home is the point at which health must be controlled ultimately.

"The character and degree of medical inspection will depend on the standpoint from which the subject is viewed, the difficulty being, of course, to attain a due sense of proportion and uniformity, particularly as to fundamental points. Valuable to science though the findings of a more thorough and elaborate medical

examination might be, it is the broad, simple necessities of a healthy life which must be kept in view. It cannot be doubted that a large proportion of the common diseases and physical unfitness in this country can be substantially diminished by effective public health administration, combined with the teaching of hygiene and a realization by teachers, parents, and children of its vital importance. The spread of communicable disease must be checked; children's heads and bodies must be kept clean; the commoner and more obvious physical defects, at least, must be relieved, remedied, or prevented; schoolrooms must be maintained in cleanly conditions, and they must be properly lighted, well ventilated, and not overcrowded; the training of the mental faculties must not be divorced from physical culture and personal hygiene. It is these primary requirements which must first receive attention."

The character of this inspection should be of a nature sufficiently thorough to insure that, at the least, no physical defect or disease could reasonably escape detection, while at the most it should insure that a detailed examination is made where disease or defect is found, or where indications from the history of the child, or from a consideration of its general physique, point to a more elaborate examination. The inspection, then, must always be of such a nature as to warrant its being classified as thorough and sufficient, while in certain individual cases it will need to be minute.

Method of Medical Inspection

There will be many diverse views as to how this inspection is best carried out in practice, and methods suitable in one place may not necessarily be equally suitable in another. It will probably induce to clearness

to describe the practice of medical inspection as it exists in the city in which the writer is responsible for its organization, and then follow this with some discussion of points arising in connection with it and of the difficulties encountered.

In the first place, the necessary notification is sent to the head teacher concerned, stating the group of children it is intended to examine, and the day and times upon which such examination is to be made. This is accompanied by a sufficient supply of notices to parents, and, in the case where the examination concerns children on admission, of health schedules also.

The actual examination proceeds as follows. The history of infectious disease or of previous illness is taken from the mother should she be present; family history is not minutely inquired into unless there is some special indication. The child's height and weight are taken, and notes made in regard to clothing, cleanliness, etc. The various points in the schedule are then taken seriatim, a glance being often sufficient to establish negative points. Thus, the presence of any external eye disease or of squint, of otorrhœa, of enlarged submaxillary glands, of defective teeth or enlarged tonsils, etc., can be quickly determined. The chest is then, in all cases, bared sufficiently to allow of listening to the heart and lungs; other methods of investigating these organs are only used when the examination with the stethoscope has suggested anything wrong. The testing of the vision is not undertaken in the case of children on admission into school; in the case of all others each eye is tested separately, and it depends upon circumstances as to whether this is best carried out for each child at the time of the rest of the inspection, or whether all the children under examination are taken in a group at the end of the inspection. It is found that this fairly

thorough examination of the children can be done at the rate of about ten children per hour, provided there is ample assistance in the undressing and dressing of the children. Unless a school nurse or health visitor is made use of for this purpose the help of a teacher is essential; without such help the work is seriously impeded. It is difficult to say how many of the mothers may be expected to be present, but in the city of Bradford from seventy to ninety per cent. have come in the case of the young children and the girls; in some of the very poorest schools there may not be more than sixty per cent.

Experience has shown that there is nothing to be gained by making other than a thorough examination of each child, whether from the point of view of the child, the parent, or the medical man. The mother comes expecting her child to be thoroughly examined, and we have found her disappointed if, for any reason, she has thought that such an examination was not going to take place; indeed, one could hardly expect her to take any other view. From the point of view of the child, experience has shown that an examination as thorough as that detailed above is undoubtedly necessary. The thorough exposure of the chest greatly facilitates any examination of the heart and lungs; any examination short of this will certainly mean that cases of phthisis and of heart disease, too, will be overlooked, and in older girls such conditions as lateral curvature. In connection with tubercle of the lungs, in particular, it is a well-known fact that it may be present in children in whom it has never been suspected by either parents or teacher; and, moreover, there is in many such cases nothing in the general appearance of the child to suggest the disease to the medical officer. From the point of view of the doctor, also, an examination as

thorough as the one suggested seems imperative. He is in a very responsible position; the child is supposed to have been carefully medically examined, and the mother feels she has a right to presume on such examination. Should the child become ill shortly after the examination, it may be, and has been in practice, a matter of importance to know for certain what was the previous condition, and if any defect or disease has been overlooked on account of insufficient examination by the school medical officer, the system and the medical man concerned will undoubtedly be brought into discredit.

Difficulties and Objections

In connection with a system so new as that of the medical inspection of school children, it may be taken for granted that difficulties at the onset will arise. There are not lacking people who object to anything which appeals to them as "interference." These objectors to medical inspection will probably be more prominent in some parts of the country than in others; it may, however, be taken for granted that any objections of this kind will gradually die down. Only one active objector was found in the writer's own city among the parents of the first 4000 children examined.

The chief practical difficulty is that connected with accommodation, and unless due care is taken the teacher may have some cause for complaint. It is, of course, quite impossible to carry out the inspection adequately without causing a certain amount of disorganization of the school and school work, especially in those schools where the accommodation is inadequate. It may be hoped, however, that the immediate and ultimate benefit gained from the point of view of the teacher by the

inspection may appeal to him or her as more than counterbalancing any temporary inconvenience, which after all is only occasional. In practice it becomes clear, too, that there is a danger that the convenience of the teacher may be studied at the expense of that of the medical examination and of the parent. It is certainly necessary, if medical inspection is to be made popular among the public, that it should be carried on in a manner to which no exception can be taken; there must be sufficient privacy, and the convenience of the parents must be studied while they are waiting. In every way the natural and right susceptibilities of parent and child must be respected. Translated into practice, this means that two rooms, or their equivalent, should be available wherever possible. The Board of Education are adverse to allowing the inspection to be undertaken away from the school premises other than in quite exceptional cases, and we think rightly. It should be looked upon as a normal and integral part of the school life, and it has, in the case of young children, a great advantage, since they feel at home in the school, and the presence of a teacher who is sympathetic is a great help. It is a matter of comment how little difficulty the children themselves present; their objection to examination is, for example, considerably less, due no doubt to the reason stated above, than is usually found in the out-patient department of the hospital or infirmary.

Procedure subsequent to Inspection

The inspection, then, in a department being completed, the children resolve themselves into three main groups. There are those in whom nothing wrong physically has been found, and who, unless anything should occur in the interval, will not be seen again until they reach the

age period at which the next examination is due. Secondly, there are those, and they will only constitute a very small proportion, for whom a more detailed examination seems desirable. Reference will be made to this class when discussing the School Clinic. Lastly, there is a considerable proportion, varying greatly in different districts and in different parts of the same district, who need watching for some reason or other or who need in addition definite treatment. Advice in regard to these is given to the parent if present at the time of the examination; if not present, a notice is sent through the post stating the condition needing attention and advising that a medical man should be consulted.

References may, perhaps, usefully be made here to the form in which the particulars of the medical inspection are most conveniently recorded. On such a matter as this there is likely to be much diversity of opinion; doubtless, however, experience throughout the country will gradually yield a reasonable uniformity of practice.* For such a purpose as this the card index system naturally suggests itself, and in most places the record will be kept upon such cards. It is clear that if all the records are kept at a central office, cards as small as is practicable must be used; but if, on the other hand, the record for each child is to be kept in the school, there remains no actual necessity to have a card, and many will prefer a form of schedule permitting of more space. The schedule used by the writer for the inspection detailed above, is a linen-backed paper, double in form and 12½ ins. × 8 ins. in size. Such schedules

* See "The Administration of School Medical Inspection especially in County Areas," T. H. Craig Stevenson, M.D., D.P.H., late School Medical Officer to the Somerset County Council. *Public Health*, May, 1909. Also sundry papers in the medical journals from 1906–1909.

are kept in school in the manner to be mentioned presently ; should a child leave school the health schedule is sent at the end of the same week to the Education Office, and any teacher who admits a child from another school under the same Education Authority applies to the Office for its schedule. Should it be considered necessary to keep a duplicate of each schedule at the Education Office, a card index system should be used.

To return, however, to further points in the procedure of the medical inspection. The examination of all the children of a given age group in the department at the time of the inspection being finished, the schedules are completed by the head teacher and forwarded to the central office. Here the medical officer goes through each one again, sending notices to parents where necessary in regard to treatment, and the schedules are separated into those belonging to boys and girls respectively, and these again are each divided into two groups, the "normal," and the "abnormal," the latter group including the schedules of all children who need keeping under observation for any purpose whatever. Each schedule is then analysed on an analysis sheet specially drawn up for the purpose, the record being made solely from the point of view of readily abstracting statistics for the purpose of the annual report. The schedules are returned to the schools in the four above-mentioned groups, being placed in especially made canvas bags with distinctive labels. This greatly facilitates re-inspection, and readily enables the schedules to be forwarded to the office at any time when required ; besides being effective, such bags are both cheap and durable.

Re-inspection

The next stage in the process of medical inspection, is that of re-inspection, without which the periodic inspection necessarily loses much of its value. Each department in which the systematic inspection has taken place should be visited again at an interval of not longer than a month. All the children whose schedules are in the "abnormal" group are seen and any necessary note made; inquiry is made as to whether the advice given has been followed out, the child, if old enough, or the teacher, will probably be able to furnish the necessary information on this point. The result of any treatment which may have been adopted will also be duly noted. Where no attention has been paid to any defect about which the parent was notified, another notice is sent or the parent asked to come up to the office, or the nurse sent to the home to interview the parent. This re-inspection will need, of course, to be regularly followed up, and no department should be left unvisited for a period at the longest of two months. At these visits many other matters will necessarily arise, apart from those connected with the original periodic inspection. Children will from time to time need to be seen who were placed among the "normals," but in connection with whom some point has arisen, some defect or disease shown itself, some matter upon which the teacher needs the opinion of the school medical officer. All such interviews of children will be duly noted on the health schedule, and this latter, if necessary, transferred for the time being to the "abnormal" packet. At these visits also any necessary inspection of the premises will be made.

Over and above these regular visits there will necessarily be occasion when special visits to certain

departments will be needed, as for example in connection with an outbreak of infectious disease, or for the making of some special investigation into certain classes of children or into problems connected with educational work and methods.

It will thus be clear that the inspection of a child at the three years' intervals, is only the basis of the work of the school medical officer; it will be valuable just in proportion as it is followed up. What is involved in this process has been partly indicated above; what further is involved will be dealt with in subsequent chapters.

CHAPTER VI

SPECIAL GROUPS OF SCHOOL CHILDREN

Classification of school children—Backward children—Varieties—Causes of backwardness—The "Förderklassen" system—The congenitally word-blind and word-deaf.

IT is only of comparatively recent years that any serious attempt has been made to classify school children, and the process, from a practical point of view, is still only in its infancy. Our elementary education system has concerned itself with children in mass, and the same methods of treatment have been meted out to all alike, largely irrespective of the great differences which obtain. In large measure, too, the same results have been looked for from all, and in the process a grave injustice has been done alike to scholar and teacher. The pressing need in elementary education to-day is the study of the individual, and, as the result of this, the right grouping of the children, arranging and modifying the methods of teaching and the curriculum to suit the requirements of the group. It is, in fact, the introduction into our educational system of the scientific method. Speaking of the system generally as applied to all children, it has largely failed simply because its foundation has been false; it is not based primarily on physiological fact and law, and the development of the brain and nervous system has been taken too little account of as the guiding principle of educational aim and method. It is not possible to deal

with this subject more fully in this place, though further reference will be made to it later on, and while it remains true to a great extent of the education of all children, it is emphatically true of those children who deviate from the arbitrary normal. Certain classes of children have, of course, long been differentiated. Such are the blind and deaf and the imbecile children, and efforts have been made, though even yet but imperfect ones only, to deal with such groups. Differentiation requires, however, to be carried considerably further, and medical inspection, and the necessary attention to each individual child which this implies, now renders this possible.

The great work, then, which lies in front of the educationist concerned with elementary education is to define these various groups, and having defined them to pursue the matter to its logical conclusion, and make appropriate provision for them.

The disabilities from which a child may suffer may be either physical or mental, or these two combined. So closely do they depend, however, the one on the other, that children cannot be classed simply into these two groups, though some may, of course, suffer from defects purely physical and others from those purely mental. There are nine main groups with which we shall be concerned, and for convenience we shall deal with them in the following order:—

1. Children of "normal" intelligence and who are not backward, but who, from some physical defect, are unsuited for the ordinary school surroundings and curriculum.
2. Backward children, consisting of two main groups—
   (*a*) Intelligent children who for some physical reason are not up to the "average" standard of knowledge, or who have come to school late or whose mental development is retarded.

(*b*) Dull children, who may be again divided into three main classes, according as their dulness is due to physical or mental causes primarily, or to a combination of these.

3. Feeble-minded children.
4. Imbecile and idiot children.
5. Blind children.
6. Deaf children.
7. Crippled children.
8. Epileptic children.
9. Children suffering from a combination of physical and mental defect, *e.g.* the blind idiot, the feeble-minded deaf child.

Group I. Children Physically Defective, but of Normal Intelligence

Children of this group are found here and there throughout the school. They include sometimes the brightest children, children whose alertness and mental capacity are much in advance of their physical powers. Their mental development, indeed, may seriously imperil the physical. Among such children will be found those suffering from chorea; those whom it seems difficult to class other than as "delicate," children highly strung and of fine texture; children with heart disease; others with some special sense defect, such as high degrees of myopia or serious deafness. It is not that these children suffer from over-pressure, but they are naturally keen to excel.

The treatment of this class is a very difficult matter, and where ideal measures cannot be taken the course presenting the fewest disadvantages has to be followed. The ideal is undoubtedly to remove them from the ordinary school surroundings and curriculum; they require to be taught under much more natural conditions where their individual physical requirements

can receive attention. For such, clearly, the so-called Open-air School is needed, the principles of which will be dealt with in a separate chapter. Failing such possibility of radical treatment, the best must be made of the conditions to hand. The teacher must be on the alert to avoid any possible over-pressure ; the child may need, for perhaps weeks at a time, to remain away from school and be taken, if possible, into the country ; in other cases attendance for half-days only may be advisable. The question of physical exercise of all kinds for these children should receive the careful attention of the medical officer.

Group II. Backward Children

The children comprising this group are of special interest ; there is a field here largely unexplored. The individual examination of these children and their classification and treatment according to their requirements, has in it the promise of most encouraging results, fully justified, moreover, by experiments which have already been made. These backward children may be found in all standards, but they are seen *par excellence* in the lowest standard of all. The spectacle presented by that special type of them which is so frequently seen in the poorer schools of our cities and towns is indeed deplorable to any one capable of judging and appreciating its real meaning. The total disregard of the individual wants of these children in the past is perhaps one of the most striking examples of how that which is daily so obvious and clear is not seen because the focus is otherwise directed. Moreover, the point of view of the medically trained mind needed to be applied, and for these children medical inspection has much of benefit in store.

The unsatisfactory character of the present state of affairs is obvious in more than one direction. It is unjust to the child, to the teacher, and to the other children.

The teacher finds himself or herself engaged in a really heroic task ; the battle is against tremendous odds. Day after day the greatest energy and devotion may be seen put into the work and a result obtained hopelessly incommensurate ; the dice are loaded ; grapes are expected of the thistle. It is unfair, too, to the other children ; a teacher cannot, considering the large size of the class with which he has to deal, give individual attention to the few at the expense of the many.

Backward children, as we have seen, may be divided into two main groups, viz., those backward but intelligent and those backward and dull. The backwardness in the first class is due either to some physical reason, *e.g.* illness preventing school attendance or such a defect as slight deafness ; or to the fact that the child has come to school late for reasons having no relation to health considerations ; or because its mental development is retarded, a condition purely physiological.

The more important group of backward children consists of those who are both backward and dull, and they require close study and differentiation. Their dulness may be due to purely physical causes, to causes purely mental, or most frequently perhaps to a combination of these. The physical causes are usually complex : poor vitality due to a chronic state of under-nourishment and miserable home conditions is the essential cause in some cases ; adenoids is another not infrequent cause, aggravated as it often is by a greater or less degree of deafness. In other children backward and dull no physical defect appears to be associated ; the condition is primarily mental, the defect is inborn In many of these cases, however, the natural condition of the child is aggravated by an adverse physical condition.

So far the detailed examination of these backward children has not been carried out to any large extent.

Dr. James Kerr, in his Annual Report to the London County Council for 1906, publishes the results of a very interesting inquiry carried out by Dr. A. H. Hogarth, in the schools of Hoxton and Haggerston. He took as the standard of backwardness the failure to pass up to the respective standard at the regular age, and in the schools examined he found among 600 children, 300 boys and 300 girls, 42 per cent. of the former and 50 per cent. of the latter under this definition. The causes as ascertained by Dr. Hogarth are set out in the following interesting table taken from the above-mentioned Report:—

		370 Intelligent.		230 Dull.		600 Total.
		B.	G.	B.	G.	
A. Primary mental incapacity.	1. Amentia	—	—	—	—	—
	2. Mental deficiency	—	—	—	6	6
	3. Natural dulness (infancy or present time)	76	63	67	50	256
B. Physical defects.	1. General diseases	7	4	2	4	17
	2. Special senses	9	11	2	10	32
	1 + 2 both	2	1	—	5	8
C. Social or moral defects.	1. Of parents	1	3	1	2	7
	2. Of child	3	4	2	2	11
	1 + 2 both	2	1	—	1	4
D. Non-attendance.	1. Ill health	10	25	5	—	40
	2. Intentional	4	3	—	2	9
	3. Change of school	34	20	2	4	60
	1 + 2 both	—	—	—	1	1
	1 + 3 both	2	1	—	—	3
Various combination of causes assigned.	A + B	8	3	9	4	24
	A + C	4	3	6	3	16
	A + D	9	19	13	8	49
	B + C	1	—	2	1	4
	B + D	7	17	2	8	34
	C + D	5	5	—	3	13
	A + B + D	—	—	2	—	2
	A + C + D	—	1	—	—	1
	B + C + D	—	1	—	1	2
	Unclassified	1	—	—	—	1
	Totals	185	185	115	115	600

An interesting analysis, as shown in the following table, is also made of the physical defects, showing their nature and the manner in which they influence the backward mental condition of the child :—

Nature of physical defect.	Primary cause of backwardness in school.						Contributory or secondary cause of backwardness.		Total.
	From defect.		By absence.		Partly by defect and partly by absence.				
	B.	G.	B.	G.	B.	G.	B.	G.	
General physical defects—									
General delicacy, anæmia, etc.	4	6	3	5	1	10	—	8	37
Rheumatism, chorea, heart disease	2	1	1	3	—	—	—	1	8
Brain fever, meningitis, etc.	1	—	1	—	—	—	—	—	2
Lungs or chest	1	—	3	3	—	2	1	1	11
Defects of special senses—									
Adenoids	2	11	—	—	—	1	12	3	29
Deafness, otitis	1	3	—	—	—	1	4	6	15
Defective vision, myopia, etc.	8	7	—	—	—	2	11	—	28
General and special defects—									
Adenoids and general delicacy	1	4	—	—	—	—	—	—	5
Deafness and bronchitis	1	—	—	—	—	—	—	—	1
Myopia and general delicacy	—	1	—	—	—	—	—	—	1
Intercurrent absences—									
Infectious diseases	—	—	1	4	2	—	—	8	30
Blight, ulcers of cornea, etc.	—	—	1	5	2	3	4	—	
Ringworm, scabies, "bad heads"	—	—	2	4	—	—	2	1	9
Operations, injuries	—	—	2	—	—	—	1	2	5
Totals	21	33	14	24	5	19	35	30	181

Clearly the only way to deal with these children is to ascertain the defect or defects and to remedy them. To do this satisfactorily may be very difficult, but as the

necessity is recognized there will be more chance of the remedy indicated being applied. Thus underfed and ill-fed children must be properly nourished; they must be given every opportunity possible of living in the fresh air; any actual disease must be treated, adenoids removed, and attention directed to the general health.

The indication for these children is the Open-Air Recovery School, wherever such a school is available, though short of this a good deal more could be done under existing conditions than is at present attempted.

The primary defect of imperfect mental development obviously calls for a modified curriculum to suit the mental state. The children require more individual attention and need to be taught on more definitely concrete lines, for, above all children, they will learn only by doing. Alike for their mental state as for their physical the Open-Air School is the ideal, for the modified curriculum of such a school is, as we shall see in a later chapter, as essential a part as are the advantages it offers from a physical point of view. The consideration of these children from the educational side opens up wider questions, however. It seems clear that many of them will never become suited for the routine of the ordinary school. In small centres this difficulty cannot be met, but in large centres where the number of such children is considerable, it may prove feasible, as Dr. James Kerr has more especially advocated, to establish intermediate schools with a modified curriculum through the school life, a curriculum which, while aiming at the development of the children upon lines along which they are capable of development, allowing of considerable self-expression, will nevertheless not pretend to reach the same intellectual standard as

that of the ordinary school; no higher attainments would be looked for than those represented by, say Standard IV.

This principle is carried out in considerable fulness in Mannheim, where the system is known as the "Förderklassen" system. A detailed exposition of this system was given at the First International Congress on School Hygiene held in Nuremberg in 1904, and the following account of the proceedings at the Congress by Mrs. F. M. D. Berry, M.D., was published in the Annual Report of the Medical Officer of the London County Council, Dr. James Kerr, for the year ended March 25, 1904:—

> "The main novelty in this system lies in the fact that, besides the classes of the ordinary schools and the classes for the mentally defective now formed in all large educational centres, there is a third system of classes—the 'Förderklassen' system. These are for children who, from various causes, are unable to keep with the ordinary school work. The reasons which caused the Mannheim authorities to found this class system were—
>
> "(i) The capabilities of children of the same age are very various owing to physiological, psychological, pathological, and social reasons. It is impossible that all children in the elementary schools should follow the same course of instruction, and reach the same goal. A considerable number of pupils never reach the highest classes.
>
> "(ii) The old system by which backward children were left behind in a class when their classmates passed up, and had to go over the same ground again with younger companions, is

found to have a discouraging and depressing effect. Such children, too, were liable to be neglected by teachers. It was considered that children who, from permanent or temporary causes, are below the average in their capacity for work, need special pedagogic and hygienic treatment in order that they might be developed as far as their powers admit, and may not suffer from school attendance.

"(iii) The children of better capabilities benefit by the withdrawal of backward classmates, who act as a drag upon the rest of the class.

"These auxiliary classes, the 'Förderschule system,' are run on similar lines to those of the ordinary school; they differ rather in the quantity than in the kind of work demanded. Instead of the seven or eight standards of the ordinary German school the curriculum consists of only five or six. The number of children in a class is smaller, thirty-five being the maximum number allowed, hence greater individuality in the teaching is possible. Special facilities are afforded the children for participating in any hygienic adjuncts to the school, as baths, dinners, or holiday homes.

"These classes are found specially beneficial to the following groups of children—children of slow understanding, but who often are not without intellectual power—nervous, anæmic, and debilitated children—children in a low, physical and nervous condition owing to unsatisfactory home surroundings, and children with defective sight or hearing, not severe enough to necessitate their being placed in schools for the blind or deaf.

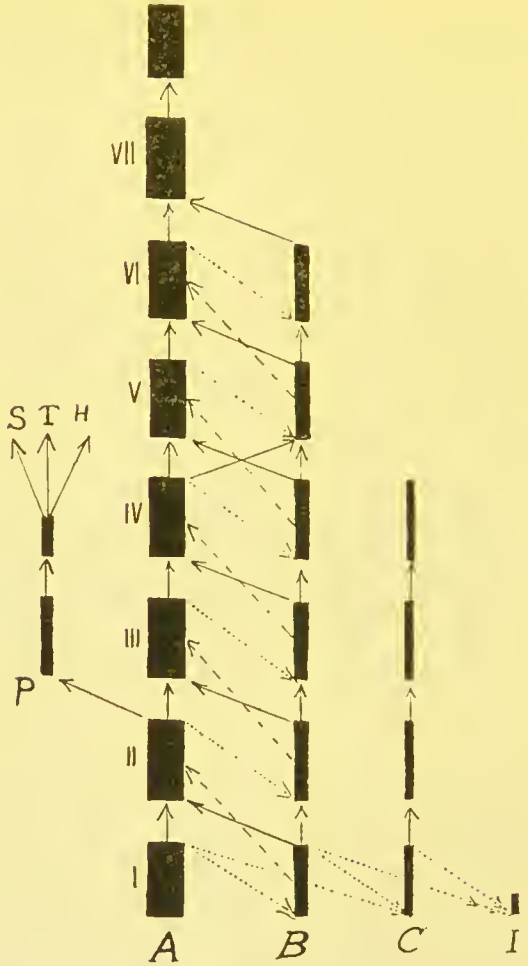


FIG. 8.

SCHEMATIC REPRESENTATION OF THE MANNHEIM SPECIAL CLASS SYSTEM.

A. The Ordinary School Courses. B. The "Förderklassen" System. C. Special Classes for Mentally Defective. I. Imbecile Asylum. P. Preparatory Classes for Secondary Higher and Technical Schools. The arrows represent the course of children, continuous lines regular promotions, the interrupted lines those promoted during the school year, and the dotted lines those passed over for simpler education.

"The children are usually differentiated at the end of their first year, the backward ones being passed out into the second or third system of classes, according as they are merely backward or actually mentally deficient. One result of the formation of the auxiliary school is that only cases of definite mental deficency are admitted to the centres for instruction of the mentally defective, and once admitted it is rarely considered desirable to pass them out. It will be seen by reference to Fig. 8 that, whereas each year children are passing from B to A, there is no such passage from C to B."

The Congenitally Word-Blind and Word-Deaf

This group, consisting of children showing, in one or another form, some variety of congenital aphasia, is one to which, up to the present, but little study has been given. The results of the observations already made, however, suggest that an important field remains to be opened up. Congenital inability to interpret the written or spoken word, while for all other purposes sight or hearing are perfect, appears to exist in all degrees up to a defect so marked that a child may have been treated indeed as an imbecile.

Congenital word-blindness is a more common defect than congenital word-deafness. Dr. C. J. Thomas calculates that "one in every thousand of the children in our elementary schools at least show this defect." * The

* "The Aphasias of Childhood and Educational Hygiene," C. J. Thomas, M.B., B.Sc., D.P.H., London. *Public Health* May, 1908.

children not infrequently find their way to a school for mentally deficient children, and in the same paper Dr. Thomas remarks: "Out of thirty cases examined in a centre for older mentally deficient boys I found that four were cases of pure word-blindness only." Dr. Thomas further remarks, when commenting upon the fact that so many cases have remained undiscovered: "The great frequency of the condition has only been brought to light by the association of school doctors with teachers in the schools, and illustrates the importance of this association and the benefit which is likely to accrue in the future from the application of physiology and medical science to educational problems."

Congenital word-deafness was first described in this country by Dr. James Kerr.* Our knowledge of the condition has subsequently been considerably augmented by Dr. C. J. Thomas, and illustrative cases will be found in the paper already referred to.

Consideration of such cases as the above suggests, as is manifest in so many other directions, what a field presents itself for accurate individual examination of children. The same kind of study of phenomena will be necessary in the moral domain as in the physical and intellectual. As Dr. James Kerr remarks in the paper already referred to:—

> "There is no doubt that in the great volume of functions whose nervous mechanisms are as yet practically unlocated and therefore unknown, in the region of the intellect, attention and self-control for instance, physiological variation is

* "Four Unusual Cases of Sensory Aphasia," James Kerr, M.A., M.D., London. *British Medical Journal*, 1900. And see also by the same author, "Physiological Variations in Childhood." (London: Sherratt and Hughes, 1908.)

just as great as in the more tangible matters of word memories.

"The children referred to occasionally as morally defective, or in some cases as moral imbeciles, are extreme cases from which there is a constant gradation in increasing numbers up to the law-abiding and social citizen.

"The children who are word-blind or word-deaf are so in virtue of defects in the small areas of brain cortex which should store up the memories of word sounds or word images. The body of memories stored up, comprising the conventions which regulate our conduct in relation to society, make up morality, a body of memories probably not more complex than the body of written or spoken word symbols. These memories are of very late evolution. It is not so long since in any community the prevalent morality ordained death to the stranger, and the lateness of evolution of what we would call moral ideas is shown by the prevalence of much difference in all communities as to not only the finer shades, but even quite common principles.

"We cannot yet locate the machinery, but if this idea of morality is correct one would expect localization, somewhere in the great silent regions, which as yet are screened from direct observation by the action of lower centres.

"Want of development of these regions will give rise to exactly the type of individual found with word defects. Incapable of appreciating one class of memory, incapable of education or improvement in that respect, and normal in all other ways; and a normal individual wanting in all moral behaviour except such as his

emotions and appetites suggest will appear in some ways exceedingly clever.

"Such are the children who come under observation occasionally as moral imbeciles—extremes, like our aphasias, extremes of physiological variation."

CHAPTER VII

SPECIAL GROUPS OF SCHOOL CHILDREN (CONTINUED)

Feeble-minded children—Definition—Numbers—Causation of feeble-mindedness—Treatment—Day Special School—The Residential Home and Colony.

Group III. Feeble-minded Children

THE third group of children follows naturally the one we have just been considering. Problems, and very practical problems too, gather thick around the feeble-minded child. The treatment and education of the child itself is of much educational interest, but beyond this, wrapt up in each of these children, are problems wide and deep, in which the old controversy as to the relative place and power of heredity and environment is being continually revived, and which have also intimate connection with other social problems of much interest.

The *definition* of this group of children is by no means an easy one ; such a difficulty necessarily follows when a group has in a more or less arbitrary manner to be separated off from others. Not that feeble-minded children do not form a very distinct group, but there must necessarily be children at each end of the scale presenting difficulties of classification ; that is to say, children who have close affinities to the backward children already dealt with and to the imbecile children,

the group next to be considered. The difficulties, however, are not so great as is sometimes thought; the real difficulty is more of a practical nature, and arises when considering whether or not a child should be taught in a special school for feeble-minded children, but this, it should be observed, is a different question.

In the Report of the Royal Commission on the Care and Control of the Feeble-Minded, definitions are given to cover all grades of mental defect.* The term "mentally defective," hitherto used mainly in regard to children and to cover only that class intermediate between the backward and dull children and those who are imbecile, is used by the Royal Commission to cover all varieties of mental defect, and all the children at present designated as "mentally defective" are classified as "feeble-minded." The following is the definition given of this condition of feeble-mindedness :—

"Feeble-minded," *i.e.* persons who may be capable of earning a living under favourable circumstances, but are incapable from mental defect existing from birth or from early age—

"(*a*) of competing on equal terms with their normal fellows; or

"(*b*) of managing themselves and their affairs with ordinary prudence."

The definitions which the Royal Commission gives of the various classes of mentally defective persons are, they state, "for practical purposes only:" with this object in view the definition given above is clearly a more satisfactory one from the point of view of the feeble-minded adult than from that of the feeble-minded child. For practical purposes there is much to be said for the

* Report of the Royal Commission on the Care and Control of the Feeble-Minded, 1908.

negative definition of feeble-minded children as given in the Elementary Education (Defective and Epileptic Children) Act, 1899, where they are defined as children who, "not being imbecile, and not merely dull and backward, are by reason of mental (or physical) defect incapable of receiving proper benefit from the instruction in the ordinary public elementary schools, but are not incapable, by reason of such defect, of receiving benefit from instruction in such special classes in schools as are in this Act mentioned." The definition is undoubtedly open, from more than one point of view, to considerable criticism, but for *practical* purposes, it will be found a useful one.

The main function of a definition of the different grades of mental defect found among children is to enable one to classify them suitably from the point of view of giving facilities for their education. The practical difficulty which arises to-day is that even where provision is made in the form of Special Schools for feeble-minded children, no such special provision is made for children dull and backward, and the provision, on the other hand, is very inadequate for those who may be classed as "imbecile." When for all three classes of children ample provision is made, there will be but little practical difficulty. Sufficient knowledge, obtained only after long observation of the child, will be necessary in some cases, and where doubt exists as to the right classification the child, receiving the benefit of the doubt, will be classified for the time being in that class which more closely approaches the normal.

In regard to the *number* of mentally defective children, this varies in different parts of the country, some of the variation probably being due to different standards being adopted by different observers: in any given area such children may be expected to be found

in the proportion of 1 in 100 to 1 in 200 of the school population.

The question of *causation* is of much interest and importance, but at present nothing final can be said. As already mentioned, the question is by no means an academic one only. The right line of treatment largely hangs on the decision as to the respective part heredity and environment play in causation: at present statistics are quite insufficient to decide this point. All the best evidence to hand, however, points to the extremely important part heredity plays and the effect of environment, pure and simple, and excluding injuries, illnesses, or accidents, recedes more and more as an effective cause into the background. Bad, unhygienic environment does not seem in itself capable of producing mental defect. Feeble-mindedness is practically as common among the children of the well-to-do as among the children of the poor, and among the children of urban as of rural areas. Did bad environment play a large part, feeble-mindedness would necessarily be much more frequently found in the poorest parts of the cities and town than is actually the case.

In this connection arises the much-vexed question as to the part alcohol plays in the production of feeble-mindedness. There are two distinct ways in which excessive drinking on the part of the parents might conceivably lead to feeble-mindedness in the offspring: (1) by injuring the germ cells of either parent in just the same way as the other cells of the body are injured by excessive drinking, and (2) by injuring the development of the brain of the fœtus through the alcohol conveyed in the placental bloodstream. There seems at present direct evidence that alcohol may be in this way a factor in the production of feeble-mindedness, but the part played by alcohol, or indeed, by any other environmental

agency, cannot be completely discussed without approaching causation from the hereditary side.*

As already stated, there seems no room for question that many cases of feeble-mindedness are due immediately to heredity; no sort of environment would have prevented the occurrence of these cases. Such children belong to what have been described as neuropathic families—families, that is to say, in which some form of mental disturbance occurs with abnormal frequency. One of these forms of mental instability shows itself in absence of power to resist the taking of alcohol to excess, and one would expect to find that drunkenness and feeble-mindedness would crop up in the same families without alcohol playing necessarily any causal part. Is this neuropathic inheritance, then, the underlying factor in every case of feeble-mindedness (other than those, of course, caused by accident and disease *in utero* or after birth)? At present, one certainly cannot affirm this, though there appears increasing justification for the view that the essential factor in the production of feeble-mindedness is an inherent predisposition to mental defect. Without such predisposition it is probable that environment, as represented, say, by alcoholism in the parent, only acts in most exceptional instances as an immediate causal agent. Given such predisposition, the appearance, the crystallizing, if one may so put it, of the mental defect may be determined by such an adverse influence as alcohol, *i.e.* alcohol may act as a precipitating cause. Clearly, however, the question is not settled by deciding that there is a neuropathic inheritance; what is the cause of this? To this question there is no satisfactory answer. The

* See paper and discussion, "The Relation of Alcohol to Feeble-mindedness," W. A. Potts, M.D. *The British Journal of Inebriety*, 1909.

main practical point which comes out in this as in every study of heredity is that, in all cases, heredity may be looked upon as essentially a potential force, a force frequently of such high potentiality that with a fatal ease it may be transformed into an active one, and no power known to us can prevent its being so transformed. On the other hand the study of heredity warrants us in taking no fatalistic attitude. Our great endeavour should be at every turn to cheat it of its prey, and, baffled though we may be over and over again, there will certainly be many victories to record. This struggle both against and for heredity interpreted into practical measures means attention to environment in the widest sense of the word. It means attention to mental no less than to physical hygiene, and demands a rational and sane outlook on life. The environment must be, that is to say, one of all-round wholesomeness, such as is frequently lacking alike among the well-to-do as among the poor, among the dwellers in rural areas as among those in urban.

Diagnosis.

This is by no means in all cases an easy matter, and, as one would expect, it is more difficult in the case of a younger than in that of an older child. To arrive at a satisfactory conclusion as to the child's mental state it is necessary to make a *clinical* examination, and the evidence must be carefully collected and the facts under the different headings of investigation judiciously weighed up and their relative value apportioned.

It is not practicable here to discuss the diagnosis of mental deficiency in detail, but the following are among the main points which require consideration.

1. *Family history.* This we have already considered.

It is of value in regard rather to prognosis than to diagnosis, but, undoubtedly, a family history of some form or forms of mental derangement would point to the conclusion that any mental defect found in the child was of a permanent character and not of the spurious type associated with malnutrition and neglect.

2. *Personal history of the child.* Information should be obtained from the parent upon such points as the following :—

(*a*) *Injury at birth ;* particularly such as was sufficiently severe to cause damage to the brain.

(*b*) *Previous diseases, e.g.* meningitis, or any symptoms suggesting it; convulsions ; any sudden illness leading to paralysis, temporary or permanent.

(*c*) *Age at which the child first walked, talked, and cut its teeth.* Delay in only one of these processes is of small moment, but when development is retarded all round, the fact may be of important significance.

(*d*) *Mental characteristics as noted by the parent, e.g.* the general temperament of the child, whether unduly placid, lacking in interest in its surroundings, or unduly excitable and restless ; whether strange in any way in behaviour ; whether showing any unsatisfactory moral peculiarities, *e.g.* deceitful or cunning.

(*e*) *Educational facilities.* It is obviously of much importance to know how far any mental backwardness in the child is due to lack of opportunity; and information is required as to whether and for how long the child has attended school, or as to efforts which may have been made to teach the child at home.

(*f*) *Home surroundings.* It will be necessary to take due account of evidence of neglect or of bad treatment.

3. *Physical condition of the child.*

(*a*) *General.* The points to be more particularly noted here will be in regard to the state of nutrition ; evidence of constitutional disease such as rickets or syphilis, or of any other disease, such as anæmia. Careful attention should be paid to the general physical condition, since mental deficiency may be simulated by mere backwardness associated with bad nutrition and anæmia in a neglected child.

(*b*) *Special senses.* Careful examination should be directed to vision and hearing. The latter is of especial importance, and it is of frequent occurrence for deaf children to be incorrectly classified as mentally defective. It is true that the two conditions may be, and comparatively often are, associated in the same child, but when such is the case it is equally important to analyse the relative proportion of the two defects. A comparatively slight degree of deafness may cause a child to appear stupid. In the examination of the child the degree of hearing for vowel sounds and for consonants must be determined, as also the extent to which the child is capable of lip-reading. The examination itself will afford valuable evidence as to the mental condition of the child.

(*c*) *Special stigmata.* Undue stress has been laid in the past upon some of these physical signs. Nevertheless, note should be made of such points as marked asymmetry of the head, of

the freedom or attachment of the lower lobe of the ear, or of abnormal curving of the little finger. It should be remembered that any one of the so-called stigmata of degeneration may be found in quite "normal" people, though the association of several such signs may well point to abnormality in mental development.* Definite neurocephaly or neurocephaly are, however, of great importance: it is unusual in a child seven years old to find full mental development when the maximum circumference of the head is below nineteen inches. Further well-marked signs of mental defect will be found associated with the physical signs characteristic of cretinism and mongolism.

4. *Mental condition of the child.* The following are some of the more important points requiring attention, and it will be necessary to make a careful examination under each heading, though only the outline can be given here.

(*a*) *Muscular Balance.* This includes observations on (*a*) the expression of the face and facial movements, such as undue puckering of the brows, twitchings of the facial muscles, continual grinning; (*β*) the general carriage of the child and attitude when standing and

* See the following by Francis Warner, M.D., F.R.C.P., "Results of an Inquiry as to the Physical and Mental Condition of Fifty Thousand Children seen in One Hundred and Six Schools," *Royal Statistical Society*, London, 1893; "Mental and Physical Conditions among Fifty Thousand Children seen 1892–94," Ibid., 1896; "On the Relations between Bodily Development, Nutrition and Brain Conditions: their Pathological Aspects," *Royal Medical and Chirurgical Society of London*, London, 1897.

walking, a flexed attitude being very noticeable in many cases of mental defect; (γ) the characteristics of the outstretched hand, whether, for instance, there is marked flexion and extension at the wrist joints, or undue dropping of the thumb or irregular spreading or over-extension or continual movement or twitching of the fingers.

(b) *Special Habits;* such as spitting or lack of control over the bladder or rectum. This latter point more especially requires careful attention. It should be remembered that children may habitually soil their clothes, and that such action is not necessarily a sign of physical disease or of permanent mental defect; it may be simply the result of parental indifference and neglect.

(c) *Speech.* The examination of the speech is of considerable importance in determining the presence or otherwise of permanent mental defect. Marked defects of speech, it is true, will often at once betray the mental defect of the child, but, nevertheless, many a child of, say, seven years of age, may speak imperfectly and fail to pronounce properly some of the consonants. Such children, however, if not actually mentally defective, can, if persevered with at the time of the examination, nearly always be induced to make the sounds correctly. If such a child, on the other hand, is found incapable of so doing such defect in speech is strong evidence of permanent mental defect.

(d) *Temperament.* The two extremes are of importance here—listlessness and placidity on

the one hand, and excitement and restlessness on the other. The former state is commonly associated with under-nourishment and bad home surroundings, and will be recovered from as these conditions improve. The latter is often characteristic, and is different in quality from that of the restless healthy child.

(*e*) *Response.* This, it is true, may be very slow in a badly-nourished and badly-nurtured child, but in an otherwise healthy child slow and uncertain response is an important indication of mental defect. Some mentally deficient children are of quick response, however, but there is frequently abnormality in the manner of response; the action is exaggerated and overdone.

(*f*) *Concentration.* Lack of concentration is perhaps the most constant of all signs in mentally defective children. It may assume a very marked degree, and the child be unable to give attention to any one thing for more than a second or two, and indeed it is difficult for the child even to sit still. This lack of concentration shows itself in every action of the child, and does not merely apply to school work. Thus the child may be incapable of looking at one for longer than a momentary glance, it is unable to follow an object such as a pencil moved before the eyes, and if asked to carry out any action it almost at once passes to some other, unless indeed the child is of the lethargic type, when the attention seems given to nothing at all.

(*g*) *Memory.* Defective memory is a very characteristic feature of mentally deficient children, and it is apt to be an important feature when other signs of mental defect may not be pronounced.

(*h*) *Purpose.* Lack of purpose and resoluteness naturally follows from what has been already indicated.

(*i*) *Discipline.* The mentally deficient child often shows lack of control in one direction or another, and will power is frequently but feebly developed. These children are good imitators and accordingly are easily led.

(*j*) *Educational attainments.* These must always be viewed in the light of the child's opportunities in the past, and they will then be found to be of the greatest value in assessing mental defect. Thus, if a child has attended school for perhaps a couple of years, and at the age of, say, seven years, knows only a few of its letters, or is unable to add correctly together two and three, there is marked presumption of irreparable mental defect. Careful attention should be paid also to the capabilities of the child in regard to manual work. It will not infrequently be found that a young child who has apparently not profited at all from instruction in the three R's will be perhaps almost as well advanced as the other scholars in some of the kindergarten work. Such is in no degree incompatible with very real mental defect.

(*k*) *Moral characteristics.* The child with marked moral defect unassociated with other characteristic signs of mental deficiency

is but rarely met with. Bad moral traits may, however, accompany comparatively moderate degrees of mental defect, and are at times of considerable value in determining the presence of mental deficiency. Thus such children may be extremely spiteful and even cruel ; they may be deceitful and untruthful, and at the same time possessed of much cunning. On the other hand marked cases of mental defect are frequently associated with a high type of character. It will be seen then that diagnosis requires great care, and a correct estimation of the mental condition can often not be arrived at until there has been an opportunity of watching the child over a considerable period. By the age of seven years, however, a careful examination on the above lines will usually enable the examiner to determine as to the presence or otherwise of mental deficiency.*

The *treatment* of this group of children is fraught with difficulties, and this is so chiefly because the whole training and education of such children cannot be considered apart from the problem presented by them as adults. No amount of education or training can transform a mentally deficient child into a normal one. Once mentally deficient, always mentally deficient, is a fact which must form the groundwork of any plan which we devise for dealing with this group. As we have seen, feeble-mindedness depends for its perpetuation essentially

* See "Mentally Deficient Children," E. E. Shuttleworth, B.A., M.D. (London: H. K. Lewis.) "Mental Deficiency," A. F. Tredgold, L.R.C.P. (Lond.), M.R.C.P. (Eng.). (London : Baillière, Tindall and Cox, 1908.)

upon heredity, and it is of supreme importance that this group of children should, on reaching adult life, not be permitted to perpetuate their stock; how frequently they have done so in the past is evidenced, *inter alia*, by the records of the lying-in wards of the workhouses.

It will be evident that nothing can be hoped for in regard to the education of feeble-minded children from the methods and curriculum of the ordinary elementary school. The feeble-minded child, separated on the one hand from the normal child, and on the other from the imbecile and idiot, must be educated in a separate school or institution. Power to do this was conferred by the Elementary Education (Defective and Epileptic Children) Act, 1899, and as a result of the passing of this Act, Day Special Schools have been established in a considerable number of the larger towns, and a few Residential Schools have also been opened. Such provision, however, is very inadequate compared with the number of children requiring this special treatment. The total number of feeble-minded children in England and Wales was estimated by the Royal Commission on the Care and Control of the Feeble-minded to be over 35,000. According to the list of certified schools issued by the Board of Education there was, in 1908, accommodation for approximately 10,000 children, over one-half of which was made in respect of London children. The accommodation thus provided is almost entirely in the form of Day Special Schools, the Residential Schools accounting for 400 of the places only.

The Day Special Schools

In considering the kind of training and teaching required it should be clearly understood that these children can never be educated in the usually accepted

sense of the word ; the methods and aims and traditions of the ordinary elementary school must be put upon one side almost entirely. Until this is done there is very little chance of useful individual development of each child being carried out.

In small towns, of course, the size of the special school will be determined by the number of candidates for such a school. In the larger cities and towns the great importance of classification should be kept in mind. The younger children should be taught separately from the older, and the older boys and girls should again be taught separately, the former being under male teachers. In spite of a few drawbacks it is probable that the best plan upon which to provide for these children is in a large school sufficiently on the outskirts of the town to provide, among other advantages, opportunity for gardening both for the older and for the younger children. This will entail conveying the children, but a car will probably be available, and, as a matter of fact, conveying cannot in any case be entirely avoided. Moreover, to have the school at some distance from the homes of the children is no great drawback ; there are substantial advantages in these children remaining at school for the day. The younger children will, as we have said, be taught individually, and the more the numbers allow of differentiation the better : in the case of some children considerable time may advantageously be spent on reading and writing for instance, while on others time so spent is simply wasted. The prime object of these schools will be, not to teach definite subjects, but to train the children in good personal habits, to make them responsive, obedient, thoughtful for others, and to give them self-respect. New interests must be awakened in their lives, opportunity must be given for self-expression in the ways characteristic of each child. Such unfolding of the life

of these children can be brought about only through handwork, and this should be the basis in one or another of its numerous forms of all efforts for their education. Such manual work should have purpose in it, and should be of such a kind as keenly to interest the children. There is no place for routine or mere monotony in the Special School. It need hardly be added that every attention must be paid to the physical condition of the children and defects remedied. Physical and breathing exercises, games, shower-baths, swimming, etc., will all be a most important part of the school curriculum. Special attention will have to be given to speech : in this the majority of feeble-minded children are defective. In the school for older girls naturally most of the time will be spent on household work of all kinds, while in the case of boys woodwork, ironwork, cobbling, and other forms of manual work, especially gardening, will form the main part of the curriculum, together with every attention to their physical development.

Copies of two time-tables actually in use are given in appendix xi., representing respectively the time-table of (1) a mixed school and (2) a school for older boys.

When, however, the best has been made of Day Special Schools, it is apparent to all acquainted with them how inadequate they are to meet the needs of this class of child, and, indeed, the more successful such schools are, the more clearly they demonstrate the capacities and capabilities of the feeble-minded, the more urgent does the need become apparent for treatment, from as early an age as is practicable, in a Residential Home, where the advantages of the training will be permanently made good use of and not wasted, or, worse still, turned to bad account when the child passes into the adult.

Nevertheless, in the general treatment of these children, the Day Special School will always have an

important part to play in all the larger centres of population. As the Royal Commissioners well say, "The Special School or Class is to be regarded rather as incidental to a general organization of industrial and institutional training than as of main or ultimate importance in itself."

Under even the most elaborate system of Residential Homes it is in the Special Day School that all feeble-minded children, unless there be some peculiar feature in the mental condition making institutional treatment essential, or else very bad home conditions, will be taught up to, say, at any rate, the age of twelve. After that in the ideal, practically all children should be transferred to the Residential Home, but this will not for a very long time, if ever, be practicable. For children not transferred, and these will include the less pronounced type and those under good supervision in every way at home, there must be a close linking up of the school with the possibilities of the after school life of the child. Where there is any hope of the child learning a trade all effort should be concentrated upon this, and by means of a trade school or by apprenticeship the child should be helped to be, as far as possible, a self-supporting member of the community. Short of this he will hardly ever prove self-supporting; he may in certain of the manufacturing towns be able to earn perhaps some eight to ten shillings a week, as a maximum, in the mill, but he will tend, unless his home is a good one, to fall into the lowest class of the casual labourer.

The Residential Home

From what has been said it will be apparent that the Residential Home, with power to retain for life, offers an incomparable advantage for the feeble-minded child.

Such a permanent home requires to be planned on the Colony system, so as to enable the necessary classification of the children, adolescents and adults, to be carried out. The arrangements for such a Colony must be broadly and generously conceived. What this entails in practice may be well illustrated by an examination of the arrangements of the Colony at Sandlebridge, Cheshire, under the management of the Incorporated Lancashire and Cheshire Society for the Permanent Care of the Feeble-minded. An interesting account of the Colony by the Honorary Secretary, Miss Mary Dendy, to whom this class of children and the whole community must remain for all time under the deepest debt, will be found in the Annual Report for 1908. The Colony, which has been founded upon an estate of over one hundred acres, makes separate provision for (1) younger boys, (2) older boys, (3) young men, *i.e.* from the ages of sixteen to twenty-one, (4) younger girls, (5) older girls. It is further the intention of the Society shortly to put up a house for men, to which the adolescents can be drafted upon attaining the age of twenty-one years. The boys and girls, though housed separately, attend the school together, and the education is largely manual training. The older boys spend part of their time, and the adolescents their whole time, in the farm and garden, and are able in this way to make a substantial contribution to the cost of their maintenance. The difficulty which was anticipated as to permanent detention is not proving so great a one as in theory seemed probable. The experience at Sandlebridge is most encouraging in this respect. As Miss Dendy says, these children remain children, and it is a great mistake to read into their thoughts the thoughts and aspirations of the adult. Properly handled it seems clear there will be but little difficulty in regard to detention. Such detention will

not be, moreover, for so long as one might expect: the tendency even under good surroundings is apparently for a considerable number of the feeble-minded to die comparatively young.

How satisfactory are the arrangements at the Colony, and how safely it may be taken as a guide when others begin to spring up, as must inevitably be the case, may be gathered from a passage in the Report of the Board of Education dated November 27, 1908, which states, "With the industrial provision for adolescents and adults added to the School, the Committee are able to regard their Institution as a model scheme of administration for handling the whole problem of the feeble-minded at every stage."

CHAPTER VIII

SPECIAL GROUPS OF SCHOOL CHILDREN (CONTINUED)

Epileptic children—Causation of epilepsy—Numbers—Classification—Treatment—Respective place of day and residential school—Blind children — Causation of blindness — Training—Deaf children—Causation—Classification—The Physically Defective—Crippled children—Education—Prevention—Imbecile and idiot children—Children with combined defects—After care.

The Epileptic

THIS group of children has much affinity with the preceding one. The association of epilepsy with mental defect is very close, and indeed, one may say that the tendency of epilepsy is always towards feeble-mindedness or actual insanity.

The *causation* of the disease must be viewed from two aspects, according as to whether the causes are (1) *predisposing*, or (2) *exciting*. The predisposing causes are by far the more important, and much of what has already been said in regard to the cause of mental defect applies also in the case of epilepsy. Thus epilepsy frequently occurs in what are called "neuropathic" families; it is one evidence of nervous instability, of which feeble-mindedness, insanity, or alcoholism are also manifestations. The history of one or another of these neuroses may with frequency be obtained in the case of

a person suffering from epilepsy, and a definite history of the disease itself in a previous generation is obtained in approximately one-half of the cases which come under notice.

The exciting causes are numerous, and will be marked or trivial in accordance with the degree of the predisposition. Thus, the first epileptic fit may occur in a child with a bad family history on very slight provocation; some slight gastric disturbance or the cutting of a tooth, or a fright or a fall, to which in the ordinary way no importance would be attached, may be the starting-point of the disease. In other cases the disease will not be precipitated without a more powerful exciting cause, which indeed occasionally may in itself be sufficient to start the onset of the disease in the absence of any predisposition on the part of the patient. Such cases are, however, comparatively uncommon, and when they do occur the exciting cause will be found to have produced definite disease, as for example, injury to the brain, or cerebral hæmorrhage or meningitis.

The age of onset of the disease is of much importance from the point of view from which we are regarding the disease. Of all persons suffering from epilepsy approximately one-half commenced to have fits before the age of fourteen years, *i.e.* the Education Authority has or has had responsibility in regard to the education and consequently, as we shall see presently, the treatment, of one-half of all epileptic persons and that, too, at the most important period of the disease, namely, at or soon after its onset.

In regard to the *number* of epileptic children, there has been so far no complete census taken. The proportion of such children to the school population has usually been put down at one out of every thousand. The Medical Examiners employed by the Royal Commission made inquiries in sundry urban, mining, and rural areas,

and found out of a total school population of 436,833 children, 314 "sane" epileptic children. This gives a proportion of one in every 1,390 children in the areas examined. In the city of Birmingham an inquiry showed that there were 206 such children out of a school population of 93,896, a proportion, that is to say, of 1 to every 455. An inquiry by the writer into all cases of epilepsy among children between the ages of five and fourteen in the city of Bradford in 1908, showed a total of 78 epileptic children (excluding a few idiots and imbeciles), out of a school population of approximately 50,000. This gives a proportion of 1 epileptic child to every 641 of the school population.

Epileptic children can be classified for practical purposes into three groups, according to whether they are (1) sane, (2) mentally deficient, (3) insane. The classification is in reality, however, not so definite as might appear. Some degree of mental defect is almost always associated with epilepsy, especially in the cases where the disease has persisted for some years, and this progressive mental degeneration which takes place is of much significance, as we shall see presently, from the point of view of treatment. The majority of epileptic children can, however, rightly be classified as sane and treated as such. Of the 78 children referred to above 70 were classified as sane and 8 as mentally deficient.

From a school point of view considerable importance attaches to the *frequency* of the fits. There is great variety in this respect. Fits may occasionally occur daily, more often at an interval of a week or so, most usually, however, at intervals of one to three months, while in some children they may occur perhaps only once in a year. They seldom occur at any regular interval, however. There may be several in a week and

then a period of quiescence for perhaps months, followed by another series. Moreover, in a child in whom the fits have appeared but infrequently, they may begin to recur with greatly increased frequency, and similarly short intervals of days or weeks may be suddenly or gradually lengthened into intervals of months.

The *time of occurrence* is of importance, especially from the point of view of school attendance. In some children the fits are always at night, in others usually during the day. Thus in the former case children may attend school even though fits are occurring with comparative frequency, while in the latter it is not usually permissible to allow children to attend school should the fits occur during school hours even though the interval may be one of several months.

The *course* of the disease presents much variation. Perhaps the point which needs especial emphasis is that children who are subject to fits seldom "outgrow" them, and although very young children who may have fits with great frequency may almost lose them during school life, there is all too serious a probability that they will recur again with increased frequency later in life. We have already spoken of the mental degeneracy which is so apt to follow epilepsy, and, more especially from the point of view of treatment of the epileptic child, it should be remembered that the cases more likely than others to lead to mental degeneration are those in which the fits first occur early in life.

The *treatment* of epilepsy is a question first of hygiene and secondly of drugs. Should a child be a member of what was spoken of above as a "neuropathic" family, every effort should be made to prevent the development of any form of neurosis in the child. This, it is true, it may not be possible to accomplish, but nevertheless in the case of epilepsy, for example, it

is quite conceivable that the onset of the disease may be prevented by an upbringing hygienic in every aspect. The measures to be followed, in the attempt to prevent the onset of the disease, are the same as those required for its treatment when developed. Fresh air at all times is essential by day and by night, an unstimulating diet, preferably with a complete absence of flesh foods, and containing a good proportion of fat; abundant sleep by night, and an hour or two's rest in the middle of the day. On the mental side, the child requires to be kept continually interested and employed. While all over-stimulation is to be avoided and too close application to purely intellectual work, yet the epileptic child is not only capable of, but greatly benefits from, regular school work. The methods of teaching, however, and the conditions under which the child is taught should be such as are found associated with the Open-air School, (vide Chap. XIV.), and not those which obtain in the ordinary elementary school.

Turning, however, to the more concrete problem, we have to consider what steps an Educational Authority is called upon to take in regard to the epileptic children under its care. The majority of such children will be found capable of attending the ordinary elementary school; their fits, that is to say, are infrequent or occur only at night. It not infrequently happens also that the child's parent is able to tell when a fit may be expected, and the child is accordingly kept from school at such time.

A certain number of children (20 out of 206 in Birmingham, 20 out of 78 in Bradford) will be found unable to attend the ordinary elementary school. The life of such children is usually very unsatisfactory. Devoid for the most part of interest, and useful and regular occupation, they tend to degenerate, and special provision for their treatment and education is imperatively called

for. It must be admitted also that some of the children who are capable of attending, and do attend, the ordinary elementary school would be much better under special treatment.

For such children, then, a boarding school is required, and the remarks which have been made when speaking of the Residential Home for feeble-minded children, apply almost exactly to this class of child also. The principle of the Colony should be adapted for these children as for them, since adequate classification is essential. As in the case of the feeble-minded child the problem of treatment does not cease upon the child attaining to the age of sixteen years. The majority of children suitable for a Residential Home will never be able to withstand the stress of ordinary everyday life, nor to earn their own living. They require to have their lives in large measure regulated for them ; under such conditions they will live, not only happy and useful lives, but in the majority of cases will be capable of supporting themselves. In respect to the result of such treatment too sanguine hopes must not be entertained of curing the disease. Our knowledge, it must be admitted, as to the course of the disease is at present imperfect. While it is true that speaking generally the disease tends to progress, it is certain that a small proportion of cases spontaneously become cured. The most that can be hoped from treatment in the Residential Home is that a somewhat larger proportion of cases will be cured, while in by far the greater number, at any rate, much improvement will result, the further progress of the disease will be arrested, and what is of the greatest moment, the onset and development of mental degeneration will be nearly always prevented. It must be clearly understood, however, that the beneficial results of treatment will only continue for such time

as the treatment is continued; should the sufferer return to the old, unhygienic conditions the chances of relapse are great, while the training and the expense incurred at the Colony will have been in large measure wasted.

Provision, however, of the nature indicated above is at present inadequate. There are only five such Residential Homes, with a total accommodation for 257 children.

The Blind

Of the special groups of school children, this class has been the most adequately provided for. This is due to the fact that special provision for blind children was made obligatory upon Education Authorities by the passing of the Elementary Education (Blind and Deaf Children) Act, 1893. There are in England and Wales 25 Residential Schools, and 15 Day Schools for blind children. For the year 1906–7 grant was paid by the Government on 1453 children attending these schools. Since, however, there are, it appears, between 2,000 and 2,500 blind children between the ages of 5 and 16 in England and Wales, a considerable number still fail to receive the benefit of special training.

In regard to the *causation* of blindness, the most outstanding fact is that a large proportion of cases of blindness could with ease have been prevented. Ophthalmia in the new-born accounts for approximately 40 per cent. of all cases of blindness among children in this country, and it is hardly too much to say that ignorance and carelessness are responsible for every one of such cases. Apart from this disease, however, other conditions causing blindness need not have occurred if early and regular treatment had been resorted to. On this point Dr. Adolph Bronner remarks—

> "A large number of cases of defective vision and blindness are due to disease of the cornea and other parts of the eye. Ulcers and inflammation of the cornea (which are very common in children), if neglected or not carefully treated, cause opacities, more or less marked. The longer the ulcer lasts and the more frequently it recurs, the more dense will the opacity become, and the more defective the sight. Every case which cannot be properly attended to at home should be at once admitted into hospital. The same applies to disease of such delicate structures as the optic nerve and retina. These require most energetic and careful treatment, and, if neglected, cause permanent blindness. If all these cases which occur in the homes of the poor (where careful nursing is often impossible) were admitted into hospital, thousands of children would be saved from defective vision and blindness." *

Other cases of blindness in children are due to hereditary defects, and will continue to arise so long as men and women suffering from such transmissible defects take upon themselves the responsibility of marriage.

In the training and education of the blind we come across problems very similar to those already met with in connection with the other special groups of school children already referred to. In this class of children, as in the others, we are only on the threshold of the problem of dealing with them when we have withdrawn them from the ordinary Elementary School. The

* "The Definition of Blindness in Children: its Causes and Prevention," Adolph Bronner, M.D. Transactions of the Second International Congress on School Hygiene. London: Royal Sanitary Institute, 1908.

majority of blind children will never be able unaided and unsupervised to earn a living for themselves; accordingly it is imperative that there shall be no break in their training and education.

Further, experience has shown how insufficient is the education provided by a Day School for blind children. This is to a large degree true for the blind children of all classes of society, but more emphatically so in the case of the children of the poor, whose parents, through lack of knowledge, time and opportunity, are quite unable to provide the necessary training for their children out of school hours. It is not too much to say, moreover, that this general training is of more importance than any actual instruction. The poor physical condition of many blind children brought up in their own homes, their lack of vigour and self-reliance and interest in what is going on, the peculiar habits they are apt to form, all point to the necessity of placing their whole lives, with social conditions such as they are, under the care and control of those specially trained for the work. The inadequacy of the day school for the training of these children is becoming increasingly apparent, and, in the opinion of many qualified to judge, but a comparatively poor return is obtained for the money expended.

The problem of the blind child is, however, it is necessary to add, not quite so straightforward as the division of children into blind and "sighted" would suggest. There are a considerable number of children who are semi-blind, who are unable to benefit from the education of the ordinary elementary school, and yet who do not require the special methods of teaching used for blind children. At present in the case of such children the pros and cons of the ordinary elementary school, and the special school for the blind must be weighed in respect to each individual child, and the alternative the least

open to objection chosen. In the very large centres of population, however, it will probably be found necessary to establish a special class for such children; we shall find the same problem arising in connection also with the deaf children.

The Deaf

This group of children, like the blind, has benefited from compulsory legislation, and since the passing of the Elementary Education (Blind and Deaf) Act, 1893, day and boarding schools have sprung up for them all over the country. There are now 28 day schools, and 20 boarding schools in England and Wales. In a few of the boarding schools day scholars attend also. In 1906–7, grant was paid by the Government on 3033 deaf children in these special institutions.

In regard to the *causation* of deaf-mutism, the condition is found to be congenital in approximately one-half of the cases in Great Britain. In the other half the condition has been acquired through disease early in life. Of such diseases meningitis, scarlet fever, and measles are the principal. In many of these acquired cases it would not, it is true, have been possible to prevent the development of the deafness, but in others early and regular treatment would undoubtedly have accomplished this. The one-half of the total cases in which the condition is congenital would be materially reduced if members of such families would abstain from marrying.

There is considerable variety in the degree of hearing among deaf-mutes, as also, in the acquired cases of deaf-mutism, in the amount of speech power left. Both these points are of much importance in the education of the deaf, and to get the best results from education a careful

classification of deaf children is required. Dr. James Kerr Love classifies deaf-mutes as follows :—*

(1) *The semi-mute.*—These are children who have lost their hearing at from 3 to 10 years of age and who, though quite deaf, have a certain amount of speech left ; they are put down by Dr. Love as forming from 5 to 10 per cent. of the children in a Deaf School.

(2) *The semi-deaf.*—But few deaf-mutes are absolutely deaf ; those who are so have usually acquired their deafness through disease. A certain, and it may be a considerable, amount of power to distinguish vowels and even words spoken distinctly close to the ear remains, and has important bearing upon the educational method adopted. This class of child forms, according to Dr. Love, from 15 to 20 per cent. of the total.

(3) *The average deaf-mute.*—The distinguishing feature about this class of child, which forms about 60 per cent. of all deaf-mutes, is that they are children who "have no hearing for voice which can be turned to account."

(4) *The mentally defective deaf.*—These form from 10 to 20 per cent. of all deaf-mutes, the proportion varying according to the mental standard adopted.

The recognition of these groups of deaf children is necessary in Dr. Love's opinion in order to settle the controversy as to the methods which should be adopted in the education of the deaf-mute, whether, that is to say, this should be by an oral or silent system. Thus the semi-mute and the semi-deaf must clearly be educated by the oral method, and in the case of the average deaf-mute, a persistent trial of the oral method should in

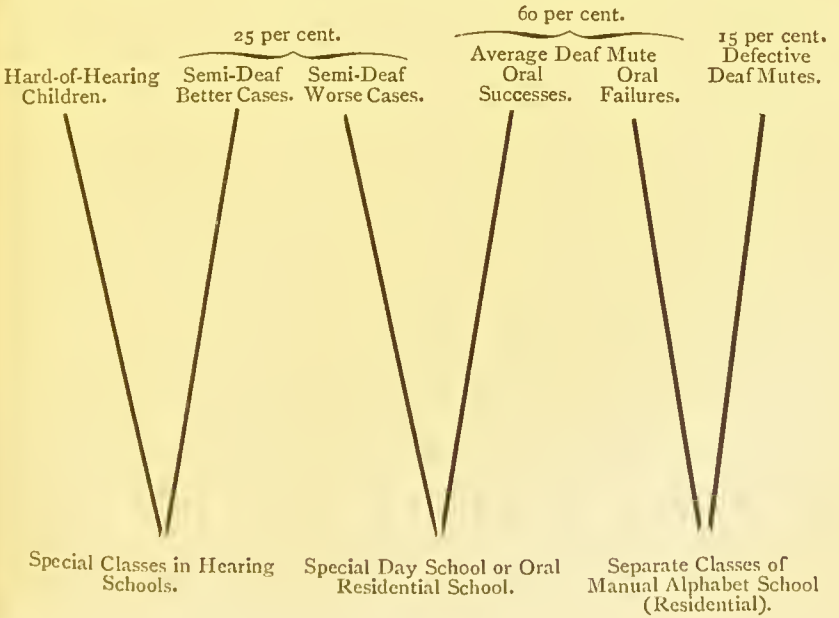
* "Educational Treatment of the Deaf in all the Stages from Impaired Hearing to the Totally Deaf." James Kerr Love, M.D. Transactions Second International Congress on School Hygiene. London : Royal Sanitary Institute, 1908.

every case be made for a year or two, and only given up when it becomes clear that there is no chance of the child responding to further efforts.

As in the case of the blind, so in that of the deaf, children are found in our schools who cannot be called deaf in the sense in which we are now using the word, and yet who are extremely hard of hearing, too much so indeed to benefit adequately from the teaching in the ordinary elementary school. Such children require to be taken out of the ordinary classes, and special classes consisting of only 10 or 12 children formed expressly for them. Some of the children classed above as semi-deaf might possibly, as Dr. Love suggests, be taught along with such hard-of-hearing children.

The following diagrammatic representation of the above classification is taken from Dr. Love's paper already referred to :—

SCHEME OF EDUCATION FOR CLASSIFIED DEAF



In regard to the question as to where the deaf-mute should be taught, whether in a Day or Residential School, the same considerations arise as we noted when speaking of the blind child. The necessity, however, for residential schools for this class of child is not so urgent as in the case of the blind, but nevertheless in regard to children coming from very poor and miserable homes, it is impossible to get satisfactory results from their education unless they are in Residential Schools.

The Physically Defective

This term, strictly speaking, includes the groups already dealt with, namely the epileptic, blind and deaf, but it is more convenient to use it as applying to children suffering from physical defects other than these. Until recently the term has not infrequently been used as synonymous with "crippled," and schools for the physically defective have been confined for the most part to crippled children. Children, however, who, in the words of the Act, "by reason of (mental or) physical defect are incapable of receiving proper benefit from the instruction in the ordinary public elementary schools," are a much more numerous class than that of "crippled" children merely. All such children, however, we shall deal with in a later chapter, namely, that on "The Open-air Recovery School," and here we shall confine ourselves to crippled children proper.

There are no available statistics as to the *number* of these children in the country. They have been put down as constituting about 3 in 1000 of the school population, but this proportion will vary within wide limits in different districts.

In regard to *causation* tuberculosis is responsible for the greater number of the cases. In an examination of

1,050 physically defective children in the London schools by Dr. R. C. Elmslie, there were 805 cripples, and of these the condition was due to tuberculosis in 480 cases, that is to say approximately 60 per cent. The remainder of the cases were due to various deformities and to different kinds of paralysis. In those cases where the condition was caused by tuberculosis, the spine was affected in 39 per cent., the hip in 40 per cent., the knee in 17 per cent., and other bones and joints in 4 per cent.

The provision made for the education of these children is at present very inadequate. A large number of cripples are confined to bed, some of whom are too ill to make any form of education practicable; a still larger number, though confined to the recumbent position, are nevertheless fully capable of benefiting from a regular course of education; while the majority of crippled children are active and able to get about, and urgently require that arrangement should be made for day attendance at school.

Provision for the education of cripples may be made, then, in three directions.

(1) *By means of a Day Special School.*—To this the majority of the cripples in a district could be conveyed by some form of ambulance, and provision must of course be made at the school for children totally unable to walk, as well as for those less severely affected.

(2) *By means of a Residential School or Hospital School.*—Some crippled children require treatment such as can be provided only in an institution for a period of months or even years. There is no reason, in many cases, why the education of such children should be neglected, though provision of this nature is but rarely made.

(3) *By the Education of Children in their own*

Homes.—This latter must be looked upon as a "make-shift" only. In the larger centres of population provision should be made by either Day or Residential Schools. In the more sparsely populated districts, however, it is probably at present too much to ask the Education Authority to make special provision for crippled children. Some really useful work may, however, be done for children in their homes by voluntary effort in those cases where no action is taken by the community. The children can at any rate be taught to read, and, if physically capable, to write, while manual work of one kind or another will greatly add to the interest of their lives. Whatever provision is made in a district by means of special schools for crippled children, there will always be a few, at any rate, for whom this home visiting will be required.

There are at present 34 Day Special Schools in different parts of the country, of which 24 are under the London County Council. During the year 1906–7 Government grant was paid on 1,802 children in these schools. In addition there are three Residential Schools, in Liverpool, Manchester, Chailey (East Sussex) respectively, providing accommodation for 145 children. It is evident from the above statements that there are many large centres of population where, as yet, no provision has been made for crippled children.

In regard to the kind of school required, the physical condition of the child must be the first consideration. The school should be built, and all arrangements made on the principle of the Open-air Recovery School as described in Chapter XIV. As the children have in any case to be conveyed to school, the site should be, though as near to the town as possible, yet sufficiently far from the centre as to meet the requirements of this type of school.

But questions other than those strictly educational are at once raised by such an institution as a Cripple School. It is impossible to view the children in such a school, or to contemplate the great expense incurred in establishing and maintaining such schools, without asking one's self whether, in the first place, all is being done, surgically or otherwise, to improve the physical condition of the children, and secondly, whether the crippled condition of such children might not have been prevented. In regard to the first consideration, the Education Authority cannot divest themselves of responsibility. As in the case of the cleansing of verminous children, or the correction of defective eyesight, they should see that adequate treatment is forthcoming; they cannot afford to allow a child to remain untreated, or inadequately treated, either in justice to the child or themselves.

But it is the second consideration which will appeal the more strikingly to an Education Authority, the question, that is, as to whether the crippled condition of the child could not have been prevented. In a great many instances this would undoubtedly have been possible. A large number of crippled children are so disabled because the disease has not been recognized sufficiently early, or if recognized has not been persistently and adequately treated. This point is well illustrated by the history obtained in the case of the children in the London schools already referred to. Thus Dr. Elmslie found the cases of tubercular disease of the spine started, in 72 per cent. of the cases, between the ages of 1 and 5 years, while those of tuberculous disease of the hip started between the ages of 2 and 6 years in 64 per cent. The age of onset of tuberculous disease of the knee and other joints was spread equally over the first 9 years. Medical Inspection may confidently be expected to assist materially in diminishing the number of cripples,

especially if arrangements are made to ascertain the reason for absence from school of all children of school age. All over the country this will mean that children on attaining the age of 5 years will be under constant supervision, while, in the large centres of population at any rate, it will mean further that something like one-half of the children from the age of 3 years will be under similar supervision. Moreover, the Medical Officer of Health through his Health Visitors is increasingly getting into contact with the homes where the parents are more especially in need of help and advice, and this affords additional ground for the conviction that the number of crippled children will be gradually diminished. Such inspection, with its corollary of requirement for persistent and adequate treatment, will materially affect the provision which it will be necessary to make for these children. A large number of the cases of tuberculous disease of bones and joints require, *in their early stages*, much more prolonged rest, good food, and fresh air than they at present obtain, and just as we have seen that the treatment from the point of view of the Education Authority in regard to tuberculosis of the lungs means the use of a Sanatorium, where facilities might be provided for continuing the education of children whose physical condition permitted of such a course, and its complement the Open-Air School, so the treatment of these other forms of tuberculosis demands in a like manner the use of a Hospital with similar educational provision and its complement of a Day Open-Air Cripple School. It is hardly too much to say that, given this searching out of the potential cripple combined with adequate treatment of the disease immediately upon discovery, more than one-half of the problem of the crippled child, and still more that of the crippled adult, would practically disappear.

The whole problem of the crippled child is an excellent illustration of the fact, which has cropped up over and over again in these pages, of how close is the connection between prevention and treatment. There is no greater stimulus to prevention, the acknowledged work of the community, than the recognition by the same community of its responsibility for the securing of treatment.

Imbecile and Idiot Children

Any detailed reference to these children hardly comes within the scope of this book. There are, it should be remembered, however, but comparatively few imbecile or idiot children who are not capable of being greatly improved by suitable training, and in certain directions of being educated to a considerable degree. This education, it will be evident, will be chiefly upon the lines of manual instruction, and not only do many such children become wonderfully proficient in this direction, but this kind of instruction is really the only manner in which it proves possible to awaken what intellectual power there may be, and it is, too, a great factor in their moral development. Except under very special circumstances imbecile and idiot children should not, either for their own sakes or for those of others, be left in their own homes. The accommodation, however, for this class of child in institutions is wholly inadequate.

Children with Combined Defects

This group, though a comparatively small one, is in especial need of attention. There may, of course, be a combination of physical defects, *e.g.* a cripple may be blind, but the children who present the greatest difficulty are those who combine physical with mental defects.

Such children require special treatment, not merely for their own sakes, but on account of the distress they cause in the home, especially in the poorer home, and also on account of the serious disadvantage entailed by accommodating them in institutions intended for children with one class of defect only.

The children with combined defects may be classified as follows :—

(1) *Insane children*, who are also blind, deaf, crippled or epileptic, or who present combinations of such physical defects. This group, it is obvious, must be dealt with primarily upon the ground of insanity, and there is urgent need for suitable provision for every member of the group. "Towards (such)," to quote a paragraph from the Report of the Royal Commission on the Care and Control of the Feeble-minded, "the public duty can consist of little more than supplying the means of medical care in a home that is more infirmary than school. And the numbers are so small that in most cases this duty would be best carried out by providing a small department for them in an institution established mainly for other types of defect."

(2) *The feeble-minded blind.* Children of this group number from 150 to 200 throughout the country. Their presence in a school devoted to the blind of normal intelligence is a very serious drawback, and separate provision is required for them. One such institution has already been established. Similarly the very few who combine epilepsy with blindness should be collected together in a separate institution, or department of existing institution.

(3) *The feeble-minded deaf.* These are found in larger proportion than among the blind, and well-marked cases constitute probably from 5 to 10 per cent. of all deaf children. The education of these children along with

those of normal intelligence is, as in the case of the blind, unsatisfactory, and separate provision should be made for them. One such school has already been established.

(4) *The feeble-minded cripples.* These occur in a very considerable proportion among crippled children. Some of them can be adequately dealt with in the ordinary cripple school, but for the most part they should be provided for separately and really require the advantages of a residential home.

After Care

No account of special groups of school children would be complete without some reference to the question of After Care. Committees known as After Care Committees are now established in most of the larger centres in connection with the schools for mentally deficient children, and these local committees, while meeting in conference among themselves from time to time, are also linked up to the National Association for promoting the Welfare of the Feeble-minded. The object and scope of such committees has somewhat altered since the time when they were first started, and they are now rather of the nature of "care" than "after care" committees. The immediate object for which they were established, namely, to keep an eye upon and to endeavour to provide work for children who, at the age of sixteen, left the special schools, has become by no means the most important part of their work. Experience has shown how limited is their sphere of usefulness in this direction. This change in the focus of the action of the After Care Committees has been coincidental with the fact which has become increasingly apparent, namely, that a feeble-minded child is not simply an undeveloped normal

child, but that it is and always will be, despite any amount of training, specifically mentally deficient.

In another direction these committees have been of the greatest service. They have proved a valuable educational force. By making inquiries, for example, into the antecedents and into the subsequent history of children who have been through the special schools, they have shown how imperative is the care and control of such children, and they have been largely responsible by means of conferences and otherwise, for forming the opinion now practically universally held that for a large proportion of feeble-minded children permanent detention in Residential Homes is required. After Care Committees have also a useful function in, when necessary, caring for the children actually in the Special Schools. It is not practicable nor necessary for officials to do such detailed work, and actual members of the Education Committee have not the time at their disposal, even if they had the inclination, for this special kind of work.

The work of an After Care Committee has been spoken of chiefly in connection with the care of mentally deficient children, but the same kind of work is needed in connection with the special schools for the Blind and Deaf and Crippled. All such work is of course closely allied to the work of Care Committees in connection with ordinary elementary schools, and which is referred to in the concluding chapter of this book.

CHAPTER IX

THE INFANT AND THE INFANTS' SCHOOL

Introductory—The lower age limit for school attendance—Physical and educational considerations—Question of infectious diseases—Provision required for children under five years of age—Conditions requiring fulfilment—The nursery school.

IN considering special groups of school children the claims of the infant * to be considered apart from the older children is a very clear one. It is a claim, however, which in the past has been but inadequately recognized, and the failure to recognize it has led to serious consequences to the child both physically and mentally. The infant cannot be looked upon as a young adult merely. Whether viewed from the physical side or from the mental, the child must be dealt with entirely upon its own merits. The basal idea to keep in mind is that the adult must evolve out of the infant, methods of training and education being gradually modified as the process takes place, not that aims and methods applied to adults should be modified to suit the infant. In considering the infant we must abandon ourselves to its demands unreservedly, with but little thought for the morrow. We shall then without fail place the emphasis in the right place, and only in this way shall we be able

* The term "infant" as used here refers to children between three and six or seven years.

to provide for the complete and satisfactory evolution into the adult.

The requirements of the infant and the essentials in its training can be arrived at by two methods. (1) By the method of actual observation of the child; and (2) by studying and following the facts in regard to the development of the child's brain and nervous system generally. The two methods, though largely distinct, are complementary the one to the other. Any system of education worthy the name must be based upon these two methods. It is not enough to leave the training of the child to instinct, maternal or other. Common-sense plays, it is true, a large part, but in so far as this is of value, it is based upon a study of the child.

This study of the child, by active observation on the one hand, and from the evolutionary and developmental side on the other, constitutes what is referred to as "Child Study," a science, so far as at any rate its wide acceptance is concerned, of recent growth only. The study of the child was, it is true, never more brilliant than one hundred years ago and over, under the great masters such as Pestalozzi and Froebel. Still it is but recently that it has been recognized as the first essential in any treatment of the child, as the foundation upon which to build. Even now it is only gradually determining practical action in regard to the training of infants in our elementary schools.

Perhaps at no time so much as when considering the problems presented by the infant shall we find it necessary to remember how broad is the interpretation which is required of the term "education." So much of the controversy which has centred around the subject has been due to the fact that the term has been used in its restricted and, one may say, indeed, its less important sense only, *i.e.* in relation to *instruction* and equipment

of the mind merely, to the acquirement of the power to read and write; to "do sums"; to stock the memory with certain facts able to be repeated at command, with perhaps but little thought as to their meaning or to their relation the one to the other.

Against education for the infant of this kind we may well protest, and probably all are agreed that it has in the past worked much mischief, and has been indeed the very reverse of education, and instead of having "led out" the child, it has repressed and restrained. Such misunderstanding and misinterpretation of the word, however, must not lead us to suppose that the infant does not require education. At no time of life, indeed, is it more imperative, and it must not be left to chance nor to people, however well-intentioned, ignorant of the kind of training demanded.

The Lower Age Limit for School Attendance

With this in view, then, we shall see that the usual method of approaching the subject is hardly the one best calculated to lead to a satisfactory conclusion. Instead of the customary question, "At what age should the child first go to school?" we should ask rather, "What is the kind of education required by the child at a given age, and where and by whom is it best given?"

The discussion, however, is complicated by the fact that the field is by no means clear, and the consideration of the subject is consequently prejudiced. There is a very large number of infants under five years of age in attendance at the elementary schools of the country. For many of these, to say nothing of the requirements of the older children in the Infants' School, the accommodation and surroundings are in many cases unsuitable, while to a large degree, both in theory and practice, the spirit of the elementary school, as a place where children

are to be "taught" in the narrow acceptation of the word, still pervades these Babies' Classes. With conditions, then, such as they are, when the surroundings are frequently so unsatisfactory in regard, for instance, to air space and ventilation, where attention to physical requirements plays so small a part, where formal teaching still so largely dominates, it is but natural that the first question asked should be, "Ought not these children to be refused admission to school?" Many answer this question unhesitatingly in the affirmative, but such an answer carries one but a very little distance. The subject, as we shall see, cannot be by any means so readily dismissed. As soon as we begin to consider it we find how much is involved—nothing short, indeed, of a reconsideration of the whole policy of the Infants' School. The problem, like so many others, though at first sight appearing to involve a destructive policy only, demands essentially a policy of construction, and one, too, which will perhaps be found to have ramifications not thought of in the first instance, influencing and modifying the whole course of education generally.

Though, as mentioned above, the correct way in which to approach this subject is by considering in the first place the kind of education which the child at a given age requires, and then to determine where and by whom this should be given, we find this latter aspect of the question already determined for us in regard to all children from the age of five years and upwards, and therefore for practical purposes we may confine our attention for the present to a consideration of the requirements of children below this age. For many of these it is clear no training other than that provided by the home is necessary, but it is equally obvious that for many others, more especially in the case of children in our large manufacturing towns, there will be no training

at all unless special provision is made for them; for these, indeed, "home training" has no meaning.

The subject may be viewed from two standpoints: (1) the physical; (2) the educational. From the *physical* standpoint the question will need consideration in relation first to the general physical condition of the child, and secondly in relation to the infectious diseases. The physical condition of the child will be satisfactory in proportion as there are secured such essentials as suitable food, fresh air and exercise, and sufficient rest. We shall refer to these points later; from the point of view now under consideration they can be secured theoretically equally well at home as at school. Practically, on the other hand, they cannot be obtained either in some homes or in some schools, and accordingly whether or not a child should attend school under five years of age will depend from this standpoint upon the relative advantages offered in a given case.

Coming to the second point, we find that the health of the child bears distinct relation to the occurrence of infectious disease, and many indeed would make this question the predominant factor in determining the age at which children should be admitted to school. The fact may be considered in relation to the most important of the infectious diseases from this point of view, namely, measles, whooping cough, scarlet fever, and diphtheria.

In the case of *measles* the younger the child the more probability is there that an attack will prove fatal. This is especially true of infants of one or two years of age; but as the accompanying table shows, the liability to a fatal termination is considerably greater below the age of five years than above.* From this point of view, then,

* From Table 32 of 70th Report of Registrar-General, 1907, and a paper entitled "Child Mortality in Relation to the Health of the State," by George Newman, M.D., D.P.H., and read at the Leeds Health Congress, July, 1909.

the age of attendance at school should be postponed, at any rate, until the age of five years, if it be granted, as it undoubtedly must be, that the chances of a child taking the disease before the age of five are greater if in attendance at school.

Disease.	Death-rate per 100,000 living at the age (in years) stated.					
	1	2	3	4	5–10	10–15
Measles . . .	630	263	142	91	22	1
Scarlet fever . .	42	66	69	54	23	5
Diphtheria . .	92	100	123	112	52	9
Whooping cough .	378	144	82	48	8	0

The same line of argument applies in the case of *whooping cough*. This is a much more fatal disease in babyhood than at any subsequent period, as shown in the table, and though the death-rate rapidly falls after the first year of life, nevertheless, from this standpoint, children should preferably not attend school before they are five years old, premising, as in the case of measles, that the liability to attack is greatly increased by school attendance.

In the case of *scarlet fever* the liability to attack increases to a maximum in the fifth year of life. The fatality is, however, considerably greater under the age of five than afterwards. The influence of school in the spread of scarlet fever is, as we shall see in a subsequent chapter, much less than that exercised in the case of measles and whooping cough ; so much so, indeed, that the question of scarlet fever is not of serious importance, from the point of view now under discussion.

Diphtheria shows a higher fatality rate below the age of five than after, but it is still high at this age, and, as a matter of fact, from this point of view, the admission

age should not be before six at the earliest, since attendance at school undoubtedly renders the child more liable to catch the disease than if it had remained at home.

Reviewing, then, these four infectious diseases, and bearing in mind their serious nature in the case of young children, not only in regard to the risk of a fatal termination, but also in regard to the damage they may leave behind them, it would seem clear that if the age of admission is to be ruled by this consideration only, then no child should be allowed to attend school before the age of five years.

There are, however, two considerations which, though they may not actually revoke the above conclusion, certainly modify it to a considerable degree.

(1) The danger of the spread of infectious disease in the Infants' School will vary with the opportunity which the school affords for a given disease to spread. In some schools the conditions for the spread of infection are as favourable as they can well be. The classes are large, up to even sixty or seventy babies being crowded together in one room, often with quite inadequate ventilation. In others, on the other hand, the conditions are much better, the classes are smaller, more floor space is allowed per child, and the arrangements for ventilation are more satisfactory.

(2) The influence of a well-organized system of medical inspection must be borne in mind. Take, for instance, the case of diphtheria. The danger of this disease spreading in school is reduced almost to a minimum if medical inspection is efficient, and under such conditions a child runs no greater risk of contracting the disease when at school than if at home. Indeed, unless diphtheria is as efficiently controlled in the home as in the school, and such is usually not the case, the advantage actually lies with the child attending school.

The advantage, however, of medical inspection does not cease here. It extends to children who have had any of the infectious diseases mentioned above, and who, through the fact that they are in attendance at school, can be watched, and steps taken in connection with any complications which may follow. Thus sore eyes or running ears following measles can be promptly dealt with in a way which, at present at any rate, would be impossible should the child not be in attendance at school.

To sum up the question, then, from the point of view of the occurrence of infectious diseases, we may perhaps say that, judged from this standpoint only, and in view of the conditions at present existing in the elementary schools, children are better excluded from school until the age of five years. The necessity, however, for this action cannot be considered so imperative as is urged by many public health administrators, and certainly it cannot be admitted that the question of infectious disease is of such importance as to override all other considerations. It will be clear, too, that the whole argument in regard to such exclusion is much modified, if not, indeed, quite nullified, in the case of the class of children with which we are now more especially concerned, provided suitable provision is made of the character shortly to be detailed.

Coming now to the *educational* advantages to be derived by the attendance at school of these young children under five years of age, we must, as already pointed out, be quite clear as to the sense in which we are using the word education. It is now universally accepted by educationists that formal instruction, such as is implied by the word "lessons," is out of place in the case of these infants. Unless one happens to be familiar with the facts, it is difficult to believe it possible that these small children should have been subjected to the

extraordinary treatment they have received in the past.

The practice which has obtained in the past of formally teaching children under five years of age such subjects as reading, writing, and arithmetic, is not only unnecessary and useless, it has been and may be productive of real harm to the child. Nevertheless, the child emphatically needs educating, and will respond to training in the early years of childhood in a way it never will at a later period. Dr. James Kerr, to whom we are indebted for so much illumination on this question of the relation of the infant to the school and school work, has laid especial emphasis upon the years from three to five from an educational standpoint. The training, however, required is of such a character that it should be possible for it to be given in every home, but as things are to-day such is utterly impossible in a vast number of homes in the larger cities and towns, and from the educational standpoint, using this term in its true sense, there seems no doubt whatever that provision must be made for some children, at any rate, to be trained elsewhere than in the home at as early an age as that of three years.

When, then, it is asked, "At what age should children be sent to school?" we must know whether the question means, "At what age should children receive formal instruction?" or "At what age should children receive their training elsewhere than at home?" Our answer would be to the first question, not before the age of six and a half to seven years, making full allowance for the fact that formal instruction cannot be considered apart from the training spoken of above. To the second we should reply, that the age will depend entirely upon the home conditions and facilities. To have to send children to school before the age of five is a serious

reflection upon the home. As things are to-day, the majority of children of five years of age and upwards are better, from the educational point of view, speaking generally, at school than at home.

Taking, then, everything into consideration, educationists have no need to quarrel with the compulsory age limit of school attendance being placed at five years, provided latitude is allowed in those cases where the needs of the child are adequately provided for in the home. Perhaps in the ideal, the discretion should be left to the parent, up to the age of, say, seven, powers being given to the local education authority to compel attendance from the age of five when circumstances seem to warrant such a course; but this step cannot be considered practicable at present, at any rate.

Provision for Children under Five Years of Age

Granted, then, that children of five years of age and upwards may be suitably provided for in the ordinary Elementary School, we come to the question as to what form the provision should take for children under the age of five years. Before doing this, however, we shall find it advantageous to consider what are the essential requirements of infants and young children—of children, that is to say, between the ages of three and seven.

The requirements of the child are the requirements of each individual cell of which its body is composed. These cells, and especially the cells of the brain, are immature — are undergoing rapid change and rapid growth. What are the conditions determining their healthy functioning, and, determining in consequence, the development of a healthy child?

The first condition is adequate and suitable *nourishment*, a supply of wholesome, unstimulating food. Starve or underfeed or wrongly feed these developing cells, and the harm done will be to a greater or less degree irreparable. As conditions are to-day, this first essential is not obtained by numbers of children. The subject is treated at length in a subsequent chapter, but we may observe here that the arguments used for children remaining at school for the day apply with especial force in the case of the infant from many points of view, and from none more than from this one of nourishment.

The second condition is an abundant supply of *oxygen*, which in practice, of course, means *fresh air*, and conversely, one may add, the absence of the deleterious products found in impure air.

A third condition is ample opportunity for *exercise* and *rest*. Alternation is a very marked feature of child development, and great activity followed by a corresponding period of rest is the normal sequence of events in the development of the individual cell. The neglect of this physiological law of child development may be frequently observed in the methods and the management of the Infants' School. This is rendered particularly obvious because such wrong activities, to some of which we shall draw attention later, have been demanded of a child, and unnecessary fatigue and strain have been induced, making the demand for rest all the more apparent. Suitable opportunity for functional activity is essential to the development of the brain cells, but they are in an immature condition only, and in the demands made upon them this fact should be recognized. Great danger attends the over stimulation of these undeveloped cells, and if the process is persisted in, permanent and irreparable injury is done. The stimulation they

require must vary with their degree of development, and be of such a nature as to assist them in their development. A second fact to bear in mind is that the cells of the brain and nervous system generally develop in sequence, group by group, and knowledge of this physiological law of development is obviously of the first importance, since the methods of education adopted must necessarily fit in with this sequence. Thus, for example, training is needed in the first place in regard to the elementary functions, and the main education of the infant lies in the formation of correct physical habits. Many children, for instance, largely untrained at home, come to school with dirty habits, and the right training of the lower nerve centres so as to form good physical habits is of prime importance at this stage of the child's development. As an important illustration, also, of this point may be mentioned training in the use of the pocket-handkerchief. Infants, on account, as we have seen in a previous chapter, of the unhygienic conditions under which some of them are brought up, are very apt to develop adenoid growths, which may, however, be largely prevented if the nasal passages are kept constantly clear; and children need to be trained in order to secure this.

Then, too, the groups of nerve cells concerned with co-ordinated movements are developing, and in some infants their development is but very imperfect. Hence, the place for walking, running, and marching exercises. It is in the Infants' School where is laid the foundation of good carriage and poise of the body. Closely associated with this is the development of rhythm, to which the infant is particularly sensitive. To develop this quality is a special function of the infant teacher, and if the opportunity be lost in the spring of the child's life, it will not recur. It may be accomplished, for example, through music, games and physical exercises

accompanied by music; also, for instance, through the teacher's voice in reading or in the telling of stories.

Fine muscular co-ordinations find no place in the curriculum of the Infants' School; the nerve cells concerned with such actions are only immature and in process of development. It is for this reason that massive movements and large objects must form the instruments of education. Thus, for example, large letters and free-arm drawings must be made on the blackboard with a large piece of chalk. Small letters made with a pen, demand fine co-ordination of muscles to guide it aright, and lead accordingly to nerve strain. This involves the undue stimulation of immature groups of nerve cells, the evils of which radiate out to other neighbouring groups, inducing fatigue — chronic fatigue — with its wide-spread harmful effects. Similarly, all fine work is contra-indicated, not primarily because of injury to the eyesight—that, as Dr. Kerr has especially pointed out, is of secondary importance—but because the effort involved in getting a clear vision of the object, owing to the immaturity in development of a child's eye, leads to evidence of nerve strain which overflows to other centres. Moreover, it necessitates close proximity of the eye to the object and a corresponding bending down of the head, contraction of the chest, and a cramped position of the body generally. It is for these reasons that the methods still often seen of teaching, reading and writing in the Infants' School are physiologically wrong, and such criticism applies with still greater force to all needlework and some of the finer forms of kindergarten work. Work of such a character is, however, gradually becoming a thing of the past.

We see, then, that all true education of the infant involves a curriculum and methods of education which will ensure a due balancing, in regard to the developing

nerve cell, of exercise and rest. But, in addition to this kind of rest, of *comparative* rest, as we may term it, the result of change in occupation and activity, *absolute* rest as represented by sleep is also demanded.

In many schools no provision is made for this latter; yet such provision is eminently desirable if not necessary, not only for the children under five years of age, but for the older children as well. This question is yet another illustration of the great advantage derived by children, especially infants going to school for the day. Definite arrangements would then be made, such as we shall see in a later chapter are made at an Open-air School, for a mid-day rest for all the children of at least an hour's duration. As conditions of home life are to-day, and in view of the comparative ignorance of so many mothers—an ignorance by no means confined to the poor—the need to provide adequate rest at school is especially necessary. Many, probably most children, get insufficient sleep, and the conditions under which many sleep are far from making it as healthful and invigorating as it should be; but with this question we have already dealt.

We have spoken so far of the activities of these younger children; but in any provisions made for the training of them it must be remembered that the early years of childhood are the most important of all from the point of view of training the senses. The influence of sense impressions, especially in the domain of the subconscious, of what the child habitually sees, hears, touches, and handles, is so great and permanent that any steps taken to make provision for infants, whether younger or older, must be determined equally by demands in this direction as in that of the motor activities. What this involves will be seen in large measure when speaking presently of the Nursery School

and its equipment. It forms in part the justification for large, airy class-rooms where harmony in form, colour, and all the arrangements prevails. It necessitates care in the choice of objects used for educational purposes, special preference being given to natural objects, and at all times to form, colour and beauty. A similar care must be bestowed upon auditory sensations, the importance of some of which may seem trivial and yet may count for much, as for example the quality of the teacher's voice.

The Nursery School

Bearing in mind, then, the points which have been outlined above, we shall be in a position to consider what in practice should follow as the consequence, and since provision is already legally made for all children upon attaining the age of five years, we may confine our attention to children under that age. Whether the provision made for these children should, though separate, be tacked on, as it were, to the present Infants' School, or whether, by the setting up of separate establishments, known in the past as Crêches, is a matter of comparative unimportance. Neither the "Babies' Class" on the one hand, nor the Crêche on the other, has been satisfactory in the past. They have neither of them, speaking generally, fulfilled the conditions demanded by the physiological laws of child development. The requirement seems clearly for some kind of Nursery Schools, and the advantages of having these an integral part of the present Infants' School are great, whether to the Local Education Authority from the point of view of administration and cost, or from that of convenience to the parents, who will very probably have an older child in attendance in one of the other departments of the

school. In some districts, it is true, suitable arrangements could not possibly be made in connection with the present Infants' School, and it would prove necessary to establish a separate Nursery School in the neighbourhood.

As to the requirements of such a Nursery School, we cannot do better than reproduce here those outlined in the report of the Consultative Committee of the Board of Education. Though the description given is considered by the Committee to be that of an "ideal institution," it should be understood that the arrangement suggested, whether of the premises, or for meeting the physical requirements of the child, or for training it in good habits, or for developing its intelligence, are such as are in the opinion of many authorities urgently required in practice, and they merit careful consideration and study.

"In describing the institution which the Committee consider to be the best alternative to the home for the large number of children for whom some alternative seems necessary, they will find it convenient to divide their remarks under the following head—(*a*) The Premises; (*b*) The Curriculum; (*c*) The Apparatus; (*d*) The Staff.

"(*a*) *The Premises.*

"The Committee consider that it would be advisable to have special building regulations for the premises of the younger infants. Without attempting themselves to frame any such formal regulations, they would like to call attention to the following points, which should be borne in mind in framing them :—

"(i) Younger infants are even more dependent upon light, air and sunshine than older children, and their premises therefore must be above reproach in these respects.

"(ii) Heavy desks and galleries should never be used.

They lend themselves to forms of instruction unsuitable to young children, and injurious to their physical development. Small tables and chairs should be used instead; these can be easily put on one side to make more room for games and play.

"(iii) Much more floor space should be provided for younger infants than is generally provided at present for older children. The floor itself should be of some substance which is easily washed, and which is not too cold for infants to sit and lie on. If the surface is of wood, it should be of a kind which does not splinter, and should be treated with a dust-allaying preparation. All the corners where the floor joins the walls should be rounded, as in hospitals, to make cleaning easier and more thorough.

"(iv) There should be an easy exit direct into the playground from any room used by the younger infants for play or lessons.

"(v) The playgrounds should be partly under cover, so that the infants can be taken out constantly even in rain or hot sunshine. Where possible, the playgrounds should contain trees, and small plots for gardens.

"(vi) The offices and washing arrangements must be suitable and as complete as possible, and close attention should be paid to their cleanliness. It will be found exceedingly desirable in some districts to provide some simple means for giving the children baths, as is done in the French Ecoles Maternelles, in many elementary schools all over Europe, and also in a few modern public elementary schools in England. In any case, a sufficiency of clean towels and soap should be provided.

"(*b*) *The Curriculum.*

"(i) The children's natural instinct for movement should not be unduly checked. They should have plenty of games and free play in the open air whenever possible.

"Cleanly habits and ready obedience should be

secured by a discipline which is kindly, but not unduly repressive.

"A careful course of training of the muscles of speech and of those of the limbs should be thought out and adopted.

"(ii) There should be no rigid time-table. An organized lesson should last about fifteen minutes on an average, the teacher being allowed to use her discretion as to whether any one lesson might be shortened or prolonged.

"The lessons should include singing, recitations, some of the Kindergarten gifts and games, and varied occupations such as ball, brick building, drawing on the blackboard, modelling in wet sand, reed and bead threading, rush plaiting, matching and sorting colours and shapes, stick laying, sand drawing, picture and conversational lessons, nursery rhymes, story-telling and story-acting.

"The following occupations may here be specifically noted as *not* suitable for these infants, namely: mat weaving, clay modelling, tablet laying, needle threading, pricking and sewing cardboard, and unravelling.

"(iii) Formal lessons in reading, writing, and arithmetic should be rightly excluded, and no inspection or examination of results in such subjects allowed.

"Nothing that requires prolonged complex operations of the nervous or muscular systems, such as sewing, knitting, or systematic drawing (other than blackboard) should be allowed. These involve strain, and the too rapid fatigue which strain produces.

"(iv) The infants should be taken frequently into the playground, and should, if possible, spend half the day there.

"(v) Infants should be allowed to sleep when they are sleepy. It is advisable to encourage them to sleep in the open air under proper conditions.

"(vi) As it is often convenient that elder boys and

girls should escort their little brothers and sisters to school in the morning, and return with them in the afternoon, it may be found desirable in many cases to keep the Nursery School open during the same hours as the school for older scholars. There is no harm in this so long as the younger infants are allowed ample time for rest and sleep during the day.

"(*c*) *Apparatus.*

"(i) Light chairs and low Kindergarten tables.

"(ii) Net-beds, or other suitable and sanitary provision for sleeping.

"(iii) Blackboards fixed round the lower part of the walls. (Where the blackboards are built into the walls they should not be recessed.)

"(iv) Pictures, simple in design and outline, and brightly coloured.

"(v) Bricks of various sizes.

"(vi) Large sand-troughs on wheels, for planting seeds and flowers, making "sand-pies," shell impressions, etc., with a supply of small spades and buckets.

"(vii) Pets, such as gold-fish and birds.

"(viii) Plants, especially when grown by the infants themselves.

"(ix) Swings, a rocking-horse, reins, balls, dolls, dolls' house, Noah's Ark, and models of animals.

"(x) A piano.

"(xi) Ample cupboards for toys, etc.

"(*d*) *The Staff.*

"(i) *The Teacher*

"The Committee deprecate very strongly the idea which appears to be prevalent that any teacher is good enough for infants. They hold, on the contrary, that the care of these young children presents difficulties at least equal to those which arise in teaching the older ones, and

that infant teachers should be selected with scrupulous care.

"In the work of selection it would seem that more importance should be attached to fitness for this particular work than to mere academical qualifications. Probably the best person to have the management of the Nursery School will be a well-educated teacher who has been trained on Froebelian principles in the widest sense of the term. Her preparation would therefore include a careful study of the physical and mental development of childhood; a thorough course of Nature Study, at any rate of the most common forms of animal and plant life, so that she may stimulate the children's interest and answer their questions intelligently; and some study of literature and history from which she could select what is most appropriate for children in poetry and story. She should have such a knowledge of occupations and forms of hand-work as may enable her to select those which will best train hand and eye without making too great demands on little children, and she should have some training in the detection of physical and mental fatigue and in the physical conditions of young children in health and disease. A sympathetic and motherly instinct is an essential requirement in the teacher of younger infants, and also a bright and vigorous personality.

"The Committee do not recommend that there should necessarily be a special training for the teacher in the Nursery School. They have rather indicated what they consider should be the special qualifications of all teachers of young children, among whom some will be found with special aptitude for dealing with the very little ones.

"It may be added here that there should be no difficulty in securing that all teachers who go to a Training College should have every opportunity of obtaining instruction in the required subjects. Those, however,

who obtain their status as teachers by passing the Board of Education's Certificate Examination may do so at present without necessarily receiving any instruction in one or two points that the Committee consider very important for all teachers. They think this defect could be remedied, however, without difficulty, if the Board of Education in their syllabus for the Certificate Examination would make it obligatory for all teachers to show some knowledge of the physical conditions of young children in health and disease, and also of the differences in the educational methods of dealing with older and younger children respectively.

"Coming now to the amount of staff required in a Nursery School, the Committee would urge very strongly that infants cannot be properly handled if too many are placed at once under the care of one teacher. No woman, however competent, can give proper attention to a class of sixty or more infants, though there are many schools where the attempt is made. The Committee consider that the number of little children under one teacher should never exceed thirty.

"(ii) *The School Attendant or School Help*

"In discussing the staff of the Nursery School, the Committee have referred so far only to the teacher. They have had brought before them, however, the imperative necessity of attending to the personal cleanliness of small children at school, and for this purpose they think it would be more suitable to provide as an additional member of the staff of the school a woman who would be a nurse or attendant rather than a teacher. Her duties would be various.* She would accompany

* See, in this connection, the note on "Femmes de Service," in French Ecoles Maternelles, page 190, and on the same arrangement in Belgian Jardins d'Enfants, page 149.

the children to their offices and by constant care induce them to learn a cleanly habit, upon the vital importance of which it is impossible to lay too much stress. Where baths were provided she would wash the children who required it, and would in any case superintend the washing of their hands and faces. She would look to the state of their hair and clothing, and promptly call the attention of the teacher to any child who came to school in a dirty condition. By such means the general sensitiveness of the children to dirt would be aroused and strengthened, and their health, as well as the sanitary condition of the school generally, would be immensely improved. The Committee do not think that there would be much difficulty in securing respectable women to undertake these duties. It must, however, be understood that such an attendant is in no sense an alternative to the teacher, though in schools where the teacher is assisted by a nurse or attendant, the number of children allotted to the teacher might be slightly increased."

The same Report contains an interesting account of the provision made for these young children in Belgium, France, Germany and Switzerland. The fact that the compulsory age of school attendance in these countries is, at the earliest, at the completion of the sixth year has meant that the provision for children under that age has grown up, to a large extent, quite separately from the ordinary elementary school system, though, as the Report shows, there is now a tendency in some of the countries increasingly to link up these private or semi-private institutions with the State school system.

Upon reviewing the whole subject it is clear, then, that the education of the infant does not require to be curtailed, but on the contrary developed. It is not that children have been sent to school when they ought not to have been, but that they have been wrongly dealt

with when they got there—they have been "instructed," and not "educated." The importance of the education of the infant is, indeed, more clear to us than ever. In their development the brain cells have, as Miss Margaret Macmillan picturesquely puts it, their spring, their summer, their autumn, their winter. If advantage is not taken of the spring of their development it will never return, and no amount of education of the adult will be able to make up for this early lost opportunity. This is especially true of sense impressions, of the storing of the subconscious memory, of the formation of habit, and of some of the more subtle traits in character. The great problem in elementary education to-day is how to extend this true education, how not only to see that it pervades the whole Infants' School, but to make its influence felt throughout the whole school life of the child. That change, as already suggested, in the ideas and methods of education of older children will follow this remodelling of the Infants' School there can be no doubt.

CHAPTER X

THE TREATMENT OF SCHOOL CHILDREN

Of general physical condition—Of specific ailments and diseases—Existing opportunities for treatment—Conditions for effective treatment—The school clinic—Close connection between inspection and treatment—Peculiar advantages of school clinic—Equipment—Treatment of specific conditions—Adenoids and enlarged tonsils—Ear discharge—Enlarged glands—Defective teeth—Heart disease—Pulmonary tuberculosis—Rickets—Anæmia—Lateral curvature of spine—Ringworm, etc.—The school nurse.

THE previous chapters, especially those dealing with the physical condition and the medical inspection of school children respectively, will have made it clear that treatment of the unsatisfactory conditions found must follow as a necessary corollary. A very little examination of the subject will show how broad must be our conception of what is involved in this term—something much more, for instance, than the treatment of ringworm and the provision of spectacles. The points which need consideration may be arranged under the following headings :—

1. The child itself.
2. The school surroundings of the child.
3. The school curriculum in relation to the child.
4. The child in relation to its home surroundings.

We shall be concerned with only the first of the headings in this chapter.

Treatment in Relation to the Child Itself

The consideration of the treatment of the child itself opens out a wide field, and we must review the question in all its aspects. It will be advisable to do so from the point of view of (1) the general physical condition and (2) specific ailments and diseases.

Treatment of General Physical Condition

The unsatisfactory features in the general physical condition, using this term widely, fall into three main groups, viz. the condition as regards (*a*) nutrition, (*b*) cleanliness, (*c*) clothing. The question of the nutrition of children has already been discussed, and further attention will be given to the subject in the chapter dealing with the provision of meals for school children. Similarly, that of cleanliness will be fully dealt with in the chapter on School Baths and Bathing.

The question of school children's clothing is an extremely difficult one; to point out, as has already been done, in how unsatisfactory a state the clothing frequently is found, is a much more easy task than to suggest an adequate and practical remedy. As in so many other directions, custom has largely blinded our eyes to the objectionable state of things at present existing. As a matter of fact, in this question of clothing, as in that of the cognate one of cleanliness, we stand, as a nation, in an unenviable position. It is true that there are not many children, except in the very poorest schools of our most crowded cities, whose clothing is actually verminous, though unfortunately the more close the examination, when the parent is not expecting such to be made, the more likelihood will there be of finding

this condition present. It is also not merely a question of ragged, insufficient, and extremely dirty clothing, though such may be found frequently enough in the poorest schools; it is rather this, that the condition of the clothing of very large numbers of the children is unsatisfactory from the point of view both of tidiness and cleanliness.

The presence of children with clothing more or less dirty and ragged cannot but have a lowering effect on the tone of the whole school in this matter, and the remedy cannot be looked upon simply from the point of view of the children immediately concerned, but also from that of the children in the school who are compelled by law to sit by others, irrespective of the condition of such companions. The remedy for this state of things will have to be sought for in more than one direction, and some reference to the subject will be made when considering the relationship between the school and the home. There can be but little doubt, however, as social conditions are at present, that in some instances the remedy must be found at least in part at the school; otherwise there will be but little chance of the condition being remedied at all. For cases of the worst kind there appears to be no alternative to supplying school clothing. We ought, at all costs, to insure that children sit clean and decently dressed in school. This is not, as we have said, necessary only for the child concerned, for whom education in habits of cleanliness and in self-respect should come second to no other part of the school curriculum, but the parents of the children carefully looked after have equal right to demand it.

Treatment of Specific Ailments and Diseases

Turning now to the treatment of specific ailments and diseases, we shall find the greatest unanimity in regard to the necessity for these conditions being treated, and at the same time the greatest diversity of opinion as to how this should be carried out; and in discussing this subject it should be remembered that those defects and diseases which more especially call for treatment at the present time are the so-called minor ailments, conditions such as the diseases of the skin, as, for example, ringworm, itch, impetigo, sores of all sorts, blepharitis, conjunctivitis, running ears, etc., conditions which, from the point of view of the child or of its associates, may urgently need remedying, and yet which do not appeal to the parents as being of any special importance.

The agencies providing treatment already in existence, and to which it is natural in the first place to turn, are—

(1) The private practitioner;

(2) The provident dispensaries;

(3) The voluntary hospitals and infirmaries, whether for special or general diseases;

(4) The Poor Law.

With the last we need not concern ourselves. In regard to the first three, they should, one would think, amply suffice to meet all the requirements of the case; but the fact that they have failed to do so in the past will necessitate a somewhat closer examination as to what these requirements are, followed by some inquiry as to how far these agencies may be expected to meet such requirements in the future.

The two main requirements are, first, that the children should receive treatment, and, secondly, that the

treatment should be adequate. In regard to the first point it is well known how large is the number of children who are in our schools suffering from the various defects already detailed, and for which no remedy is sought. This remains true even in places where there has been some amount of medical inspection. The writer's own experience in the past has been that not more than about one-third of the parents notified have paid attention to such notices, and the reason is undoubtedly, in many cases, because the parents do not believe that the defects are such as are worth troubling about. The further opportunities now available for making inspection and re-inspection more thorough, for interviewing parents or sending a nurse or health visitor round to the home, and the increased help likely to be received from the teacher in the direction, for instance, of interviewing a parent, will undoubtedly lead to a much larger number of children receiving attention than heretofore. "Care" committees, now coming into existence in one form or another, are likely to help also materially in this direction.

In regard to the second point, namely, that treatment must be adequate, this involves, *first*, that the right kind of treatment shall be provided. The advice given and the medicine prescribed may be excellent as far as they go, but more efficient and drastic measures are often required to run concurrently, such as are provided in the Open-Air School, the suitable feeding of the child, or a visit to a convalescent home. Moreover, it is not enough to know that skilled advice and treatment on the part of the doctor is available. In some cases the urgent demand is for treatment, and, it may be, daily treatment, by a nurse.

It involves, *secondly*, that the treatment should be persistent. The difficulty is far from having been overcome, even when we have been successful in getting the

child taken to a medical man; for even then but little benefit is apt to accrue. In the case, for instance, of conditions needing continuous treatment, *e.g.* running ears, parents often will not persevere in the treatment. In the case, too, of defective eyesight, they may get the child's vision tested and a prescription given them for glasses, but they carry the matter no further; either they cannot or they will not buy the glasses. Treatment is often, then, by fits and starts, and may in consequence be of comparatively little avail.

Thirdly, it involves, as a necessity, that there shall be a close connecting link between the medical inspector and the doctor who treats the child. Without this much of the value of medical inspection will be lost. To know, for instance, the opinion of the doctor who is treating may often be very necessary; it is unsatisfactory to have to rely solely on what the parent says the doctor advises in the matter, for instance, of the child's attendance at school. This requirement is especially emphasized in the case of children absent from school without medical certificate, or who return to school after illness without such certificate. A serious danger arises here, more particularly in relation to the spreading of infectious disease, such as diphtheria in particular, and, in less degree, of scarlet fever. This subject, however, will receive a more extended reference in a future chapter.

In any scheme, then, for the efficient treatment of school children, the above points will require to be taken into account, and the difficulties solved, if the full benefit is going to be obtained from medical inspection. The problem is a somewhat different one, according to whether we are dealing with the larger cities and towns or with rural areas, a difference chiefly due to the presence, or absence, of voluntary Hospitals or Dispensaries, especially of Hospitals for, or containing departments for,

treatment of diseases of the eye and ear. It will be solved in different ways in different places; uniformity in methods adopted, if it ever comes, will only be after long experience.

In regard, then, first, to the fact that the majority of children who require treatment, more especially for the minor ailments spoken of, have not, up to the present, received that treatment, it is probable that, for the most part, the parents will not be in a position to secure treatment if they have to pay for it. This will mean that a heavy call will be made upon Hospitals and Dispensaries; a call which in some places—notably, for example, in London—it may be found difficult to meet. Such difficulty will be in large part a financial one, and could, of course, be got over by an adequate payment to the managers of the Institution or Dispensary. It must, however, be understood that in many places, at any rate, such contributions to the funds of a charity would not be made unless some representation on the management committee were granted in return. This could hardly fail, sooner or later, to change the character of these voluntary institutions and charities. Another method of securing treatment for this class of child would be by enlisting the aid of a private practitioner, the Education Authority meeting the expense involved. In the larger centres of population, more especially, the practical disadvantages of such a plan would probably prevent its being put into practice.

The second requirement, namely, that the treatment should be adequate in the sense in which we have been using the word, presents still greater difficulties if it is to be satisfactorily met by existing agencies. Whether viewed from the standpoint of the right kind of treatment in which the whole physical condition of the child cannot be separated from the "minor ailment" from which it

may be suffering, or from the need of insuring continuous treatment, or from that of insuring there shall be a close connecting link between the doctor who inspects and the doctor who treats; from whichever of these points the subject is viewed, it must be allowed that the difficulties of insuring the treatment—the adequate treatment—of all children by means of existing facilities are of a very real nature.

It is for this reason that the demand seems steadily arising for some arrangement which shall meet the requirements which have been enumerated in a more efficient manner than has been the case in the past. One method of doing this is by the establishment of the School Clinic.

The School Clinic

The term "School Clinic" was originally used to denote a place set apart for the further examination of school children in the manner already described in Chapter IV. The term in this sense has long been in use on the Continent. The idea that children should be treated at the School Clinic is of quite recent growth; nevertheless, in this country the term is now, as a matter of fact, hardly used except in association with the idea of treatment.

Whatever opinion may be held with regard to the propriety of the Local Education Authority making itself directly responsible for treatment, it must be admitted that it is difficult to dissociate examination at a School Clinic from treatment. Thus, if the Clinic is used, for example, for the further examination of all children found suffering from deafness during the routine medical inspection of schools, it could hardly be considered a practical procedure to make no arrangements for treatment in those cases, for instance, connected with otorrhœa,

Similarly, in regard to the examination of vision defect, if provision has been made for the detailed examination of the eyes, it is not satisfactory that the responsibility of the Local Authority should stop at the writing of a prescription for glasses by their medical officer. It almost necessarily follows that power should be granted to them of making arrangements for the provision of spectacles, not only that they may be granted free in necessitous cases, but that they may have control over the kind of glasses supplied, and also the price charged for them, and that the optician should be directly responsible to the Authority for the accurate execution of the prescription and fitting of the glasses.

But, after all, the establishment of the School Clinic rests on the ground that it meets in so complete a manner the requirements for effective treatment already laid down, and its justification may be considered from the following points of view :—

First, it insures the treatment of defects and diseases in children which up to the present have been largely neglected.

The conditions which may be more particularly enumerated are, for instance, defective vision, ear-discharge, ringworm, sores of all kinds, such as sore head, impetigo, scabies, sore eyes and eyelids. It insures treatment of these because it lays itself out for the purpose, its concern being to see that the child is cured as quickly as possible, not only for the sake of the child's physical health, but also for the sake of the other children in the school, and of the school attendance of the child. It is, indeed, to the interest of the Education Authority to see that every child is treated, and the medical man approaches the question from a school point of view, and accordingly takes an interest in "uninteresting cases."

Secondly, the School Clinic being in close relationship with the school attendance department, the necessary machinery can be brought to bear to insure, at any rate, in the vast majority of cases, that no child suffering from such conditions as mentioned is left untreated, and, the child being once under treatment, the necessary steps can be taken to insure regularity of attendance. Thus, should the child not be brought, a more peremptory notice may be sent, or the attendance officer may call, or the school nurse may go round to the home. The attendance of the child is a thing practically insured, as the parent is at the same time given to understand what will be the consequences of neglecting the child. Indeed, so far as concerns the physical defects and diseases mentioned, the School Clinic reduces the possibility of parental neglect to a minimum.

Thirdly, besides the necessary medical attention, the School Clinic provides what in some cases is more important still, namely, the daily attendance of a nurse. Children suffering, for example, from "running ears" often derive but little benefit from a fortnightly or even weekly attendance at the hospital or dispensary, even though the mother attempts to carry out the daily cleansing of the ear herself. This is seldom effectively done, and treatment by the nurse as often as seems required is essential. With the machinery of the Education Authority at the back of the School Clinic this regular attendance, daily if required, can be largely secured.

Fourthly, a great advantage accrues from the fact that the authority responsible for the treatment is in close connection with the schools. The teacher, if the child be attending the school, can be notified when the child has to present itself at the Clinic, and can assist in seeing that the child attends; further, a certificate

showing that the child attended at the Clinic will enable the teacher to mark the child as "present" at school. This linking-up of the teacher with the child is a great advantage.

Fifthly, the School Clinic presents an important advantage in another and quite different direction. It greatly adds to the interest of the work of the School Medical Officer. The monotony of mere inspection is removed, and not only will the work of inspection be better done, on account of the added interest provided by the carrying out of treatment, but it means, too, that more efficient and capable men and women will be drawn into the school medical service.

In considering the character of the medical staff required for a School Clinic, it should be understood that "specialists" are not needed in order to carry out the treatment of the vast majority of the cases which present themselves. Cases, however, will arise from time to time, in the Ear Clinic, for example, where something more radical in the way of treatment is required, *e.g.* mastoid operation may be necessary. In any such cases, arrangements must be made to insure that the child gets the benefit of such special advice. Where there is an Eye and Ear Hospital, or a department in a Dispensary or general Hospital, for this special work, cases requiring the advice and treatment of a specialist can, of course, be referred there, and, provided the financial condition of the parent warrants it, the child will be treated. It will be necessary, at the same time, to see that arrangements are made to enable the School Medical Officer to obtain a report from the specialist on the child so referred. Where such a course does not seem practicable, it may be found advisable for the Education Authority to make their own arrangements for obtaining the assistance of a specialist when required. As a matter of fact, however,

as has been stated, the number of children attending a School Clinic who need the advice of a specialist is not great.

Equipment of the School Clinic

No elaborate equipment is necessary in order to carry out the treatment of such conditions as have already been mentioned. Naturally the accommodation required will depend upon the number of children to be dealt with, and the nature of the ailments treated. The following, at any rate, would appear to be required :—

(*a*) A room about twenty feet long fitted up with the needful requisites for vision testing. The vision room can, of course, be used for more general purposes also.

(*b*) A small consulting-room for each medical officer.

(*c*) A room for the nurse, where ears can be syringed, sores attended to, etc.

(*d*) Suitable waiting-room accommodation. This is very important, and in addition to a large room for general purposes, one or two smaller rooms should be provided. These are required for children suffering from ringworm, for example, or for children who come up to the Clinic for examination after infectious disease ; or for "contacts," in the case of diphtheria, who attend to have a "swab" taken of the throat.

Further, if the X-ray treatment of ringworm were included, there would be required—

(*e*) A room for an X-ray apparatus for the treatment of ringworm, or for any other purpose to which an X-ray apparatus may be put.

(*f*) A small room used exclusively for the after treatment by the nurse of children who have been exposed to X-rays. It is not advisable that other children should be treated in a room where epilation of ringworm hairs is going on daily.

(*g*) If a Dental Clinic is included, it will, of course, be necessary to add the requisite accommodation.

What will ultimately be the place which the School Clinic will hold it is impossible to say. It is quite certain, however, that it will evolve along different lines in different places. Though it is quite true that there is no absolutely hard-and-fast line to be drawn in regard to diseases which seem to demand the establishment of a School Clinic to cope with them, nevertheless, the diseases seem to fall with considerable accuracy into the groups already outlined. Such, at any rate, is the experience of the working of the School Clinic at Bradford, which has been conducted upon the lines above indicated since its establishment in June, 1908.

The growth or otherwise of the School Clinic as a place for the treatment of children will depend upon the view taken of the question by the Board of Education. No arrangements for the treatment of children involving expenditure of money can be carried out by a Local Education Authority without the sanction of the Board of Education. Reasonable latitude in methods seems likely, however, to be granted to different Local Education Authorities, since only by careful and cautious experiment on well thought out lines will it be possible to arrive at methods which will be likely to prove of permanent value.

We have spoken so far of the general arrangements which it seems necessary to make for the treatment of the various conditions and diseases of children in the schools, and it will be necessary now to make a fuller reference as to the nature of the treatment required in some of these conditions in particular.

Adenoids and Enlarged Tonsils require treatment in accordance with the degree of the defect. Tonsils, for instance, only require removal where large enough to

produce symptoms, and in the case of adenoids each case must be judged on its own merits. There are many children met with in school for whom no kind of treatment other than operative will be of the slightest avail ; their day has gone by for milder measures. In other cases, however, hygienic measures must be tried. This means that the diet, which is often faulty in the case of these children, must be rectified, and every endeavour also must be made to get the parent to understand the necessity of fresh air, especially at night time. Breathing exercises should be regularly practised. Such children, so far as possible, should be sent to an Open-Air School. All these children need to be kept under careful observation, and with a thorough system of medical inspection this is now possible. And not only do the children need watching from the point of view of operative treatment, but still more do they require to be watched *after* operative treatment. Whenever possible children who have been operated upon should be sent for three weeks to a convalescent home, preferably by the sea, and careful attention should be paid to hygienic treatment if full benefit is to follow the operation, and daily attention should be given to breathing exercises. It would be greatly to the advantage, moreover, of all children operated upon for adenoids if they could, subsequent to the operation, spend at any rate a month at the Open-Air School.

Ear discharge requires regular and persistent treatment. As we have already seen, untreated the disease may be a very serious one, while to regular treatment, consisting of the daily cleansing of the diseased parts, the vast majority of the cases will respond. In a very small proportion only is operative treatment necessary, and this only, as a rule, because treatment in the early stages has been neglected. It need hardly be said that

the treatment would be greatly facilitated were the child able to attend an Open-Air School, where provision was made for daily syringing.

Enlarged glands require operative treatment only where they are very much enlarged. In the vast majority of cases treatment along three main lines is required: (1) *Open air;* these children are those for whom the Open-Air School is *par excellence* indicated. (2) *Suitable nourishment;* they need sufficient but unstimulating diet, in which fat, in the shape of milk and butter, is well represented. (3) *Cod-liver oil*, though this will not be found so necessary where the two first conditions can be fulfilled.

The treatment of *defective teeth* is almost neglected in this country as far as the Elementary School population is concerned, and with disastrous results. A Dental School Clinic is probably the only way in which this aspect of treatment is likely to be adequately grappled with in the large centres of population. It is altogether beyond the scope and power of voluntary effort, and indeed this latter has but little chance of proving really effectual. It need not be said that along with the actual treatment of diseased conditions found there must be a vigorous campaign in regard to prevention. This must be carried on both in the home and in the school. If prevention is to be effective, it must begin before the child comes under the cognizance of the Education Committee. A great opportunity is presented by the visits of the lady Health Visitor, who, though she may be visiting ostensibly in connection with the arrangements made by the Health Committee for infant care, can do much to train the mother to recognize the importance to her children of this branch of personal hygiene. The school, too, can help. The children can be taught the necessity for the daily brushing of the teeth, and, if

necessary, some arrangement might be made to supply tooth-brushes to them.

The treatment carried out at the Dental Clinic will comprise—

(1) Cleansing of the mouth in cases where septic conditions are present.

(2) Extraction of teeth too far decayed to permit of their being saved.

(3) Preservation of decayed teeth by means of fillings.

Dental Clinics are very successfully organized on the Continent; that at Strassburg is a good example. A full account of this Clinic was given in a paper by Professor Dr. Jessen at the Second International Congress for School Hygiene, and he conclusively shows how great is the advantage derived by the children by systematic attention being paid to their teeth, and how much benefit can be obtained at a comparatively small cost.

In January, 1909, a report was published, already referred to, on dental inspection and treatment of school children in the Borough of Cambridge. A total of 2,946 children was inspected, and of this number 1,092 were treated in one way or another. The table on next page taken from the report gives an interesting summary of the work done.

Commenting on the table, the report states—

"The column headed 'Refused further treatment' relates to children for whom some fillings were done, but who did not return to have the work completed. Approximately four fillings were necessary for each child. This would, however, only mean three teeth, as in a large proportion of cases there were two cavities in the same tooth. The average time taken to do fillings amounted to about twenty minutes each. Of the 603 children for whom extractions were necessary about three-fourths needed the removal of septic teeth, which

Month.	No. of children examined.	No. of Children treated.			Fillings.					Extractions.			Dressings of silver nitrate.
		For Fillings.	Extractions Only.	Refused further treatment.	Cement.	Gutta Percha.	Amalgam.	Amalgam and cement.	Amalgam and root treatment.	No. of children.	Temporary teeth.	Permanent teeth.	
November, 1907 .	62	53	13	7	9	6	166	46	8	31	51	1	26
December . .	62	59	9	7	19	1	142	23	7	21	22	5	48
January, 1908 .	194	79	22	—	7	2	174	47	2	52	67	5	135
February . .	228	82	40	7	—	5	206	54	2	105	171	3	98
March . . .	352	63	27	10	—	2	158	64	2	52	87	6	40
April . . .	209	53	22	6	—	7	132	69	2	40	58	2	93
May . . .	242	71	54	4	4	1	177	115	—	90	144	4	128
June . . .	232	56	17	7	—	4	145	103	3	33	54	2	58
July . . .	450	58	20	2	—	1	96	69	1	51	57	—	122
August . . .	4	29	11	—	—	—	91	64	—	17	17	4	66
September . .	76	54	36	6	3	—	145	107	1	42	58	2	87
October . .	411	74	32	2	—	—	135	114	—	69	85	—	223
Total . .	2522	731	303	58	42	29	1767	875	28	603	871	34	1124
		1092			2741						905		

were discharging pus. The rest had temporary teeth unduly retained, which, if not removed, would have retarded the appearance of the permanent teeth."

Turning now to the more general diseases, the treatment of *heart disease* is largely a question of regimen and avoidance of excitement, stress, and excessive physical exercise. Children suffering from heart disease of a not advanced type are very suitable for the Open-Air School, where they can be under frequent medical supervision.

In connection with the treatment of diseases of the *lungs* we may confine ourselves to *tuberculosis.* The point to emphasize here is the necessity for appropriate measures being taken immediately the disease has been recognized on medical inspection. Such action is necessary, not only for the benefit of the child, but of other children, and the chances of curing the disease depend upon the promptness with which the necessary methods of treatment are resorted to. Moreover, it must be frankly stated that there is only one method of adequately dealing with consumptive children in our elementary schools, and that is by the method of Open-Air Sanatoria. Here, under, of course, the continual supervision of a resident physician, the children would be treated according to their individual requirements. Some will need treatment as sick patients, with no thought of school work; others will be able to continue their education upon the lines detailed in the chapter on Open-Air School. All children after discharge from such a Sanatorium will need to continue their education upon Open-Air School lines.

The same line of argument must be applied to *all other forms of tuberculosis;* in whatever form the disease presents itself the child should be treated at what may perhaps best be termed a School Sanatorium, or at an Open-Air School.

The treatment of *rickets* in the school child resolves itself into a question of endeavouring to ensure good hygienic surroundings, and here again the Open-Air School is the best solution that the Education Authority can offer. Operative treatment must at times be resorted to, since the deformity is in some cases not only great but fixed, and the time has passed for hygienic methods by themselves to be effectual.

Anæmia must be considered in the light of the two principal clinical forms it assumes in school children. In the case of the underfed and illfed child the indication for treatment is clear, and the benefit of the Open-air School for the child is most striking, as will be seen from the result recorded in the chapter devoted to the subject. Older girls who suffer from anæmia need, in addition to hygienic treatment and modification of the school curriculum, suitable drug treatment.

Headache is a symptom only, and must be treated as such, the underlying causation being first determined—*e.g.* anæmia, adenoids, eyestrain consequent upon defective vision, etc. The appropriate treatment already considered for these conditions must then be followed.

Lateral Curvature. This is an eminently preventable condition, and the lines which prevention must follow will be clear from what was said in regard to causation. Suitable desks and seats, and attention to hygienic methods in education from the infant school upwards, are required. When present, the form of treatment will vary with the severity of the disease. Rest and exercises are the two great remedial measures. In more advanced cases the first is the more important, at any rate, at the commencement of the treatment. Exercises taken from the Swedish System of drill are admirably adapted for the treatment of lateral curvature.

Lastly we come to *diseases of the skin.* We shall

not need to enter into the subject fully, but some reference must be made to the treatment of a few of the conditions of which we have already spoken.

Ringworm has up to quite recently been treated by drugs; that treatment has, however, been often of a very unsatisfactory nature. The disease, especially when allowed to spread before active treatment is undertaken, takes usually a very long time to cure, many months as a rule, and it may be even years. It is eminently a disease for treatment at the School Clinic; short of this, persistent and effective treatment is difficult to insure. The treatment by X-rays is now gradually replacing the older methods; with the newer forms of apparatus, the danger of giving an excessive dose and producing permanent baldness is reduced to an almost negligible minimum. The following is a brief outline of the procedure :—

(1) The area of the scalp to be exposed to the rays is shaved; it is always preferable to shave the whole scalp so that no small affected areas may be missed.

(2) The scalp is marked out with a dermatological pencil into a suitable number of areas for successive treatment. Tubes of different sizes are provided which transmit the X-rays, and the areas so marked out will depend upon which and how many of these tubes are selected as being the most advantageous to employ in order to expose the whole area required.

(3) The areas so marked out are successively treated, the appropriate tube being used for each exposure. The time taken for each exposure will depend upon the "hardness" or "softness" of the Crookes' tube, but will average ten or twelve minutes. The number of areas treated at a sitting will depend upon the child, but usually all the areas requiring treatment, seldom more than five, can be treated at one sitting.

(4) After exposure, the unaffected part of the scalp should be greased with vaseline or similar preparation to prevent infection, as the hairs will begin to fall out after a week or two. These are still capable of conveying the disease, since the X-rays do not kill the fungus. A cotton covering should be worn over the area exposed to the rays, and should be removed and destroyed each evening and replaced by a clean one. The head should be bandaged or covered by a suitable cap.

(5) The children should come up to the Clinic for inspection after treatment, and epilation should be begun by the nurse as soon as the hairs are loose enough to allow of easy removal. From the second to the fourth week the more frequently the children can attend the better; they should, in any event, present themselves twice weekly. In a favourable case epilation should be complete in between three or four weeks.

(6) As soon as epilation is complete the child may return to school, though some suitable ointment, *e.g.* 30 grains each of salicylic acid and sulphur to the ounce of vaseline, which is especially useful for clearing up any remaining scurf, should be used daily, and the child must report itself in a fortnight's time.

A good deal of experience is necessary before systematically satisfactory results can be obtained. In spite of the fact that the more modern X-ray apparatus measures the dose of the rays given with much apparent precision, the effect of the same dose varies greatly on different children, and curiously inexplicable results are occasionally obtained. Into the technicalities and the many details of the treatment, it would not, however, serve any useful purpose to enter here.

The great majority of the children are enabled to return to school in between four and five weeks. In a few cases it will be found that epilation does not take

place, and another exposure to the rays after an interval of, say, six to eight weeks, may be necessary. It is noteworthy, however, that some of these cases, treated with some such ointment as suggested above, become cured in the interval, and with a rapidity which would have been impossible had the ringworm not been exposed to X-rays. Thus it will be seen that compared with the older methods of treatment a great saving of time is effected. This means less loss of attendance on the part of the child, and, what is also of importance to the local education authority, increased Government grant.

To the treatment of such conditions as *pediculosis* and of the impetiginous condition of the head associated with it, and of diseases such as *scabies* and *impetigo*, detailed reference need not be made. In all such conditions the School Clinic affords, as we have seen, peculiar advantages.

All questions of treatment necessarily are complicated by the additional one of cost. But from the national point of view, which is clearly the only reasonable one for the nation to take, the later treatment is deferred the more it costs directly and indirectly. Quite apart, then, from the question of justice to the child—surely a very sufficient reason for securing prompt and adequate treatment—the nation, on the ground of self-interest only, cannot afford to do otherwise than boldly adopt a policy which will insure the appropriate treatment required being within the reach of all children. Any other policy will be expensive in proportion as it falls short of this.

The School Nurse

Frequent reference has been made throughout this chapter to the school nurse, and her place and function must now be more fully dealt with. She constitutes an

indispensable part of effective medical inspection and treatment, and indeed no system seems quite adequate in which she does not play an important part. Her duties may be grouped under the following headings :—

(1) To assist, if desired, in the carrying out of the medical inspection. The need of her services here will depend, first, upon how much of the actual inspection is undertaken by the doctor ; he should, in our opinion, as stated in an earlier chapter, undertake practically the whole of it himself. Secondly, upon the amount of aid given by the teachers in respect to the dressing and undressing of the children in the cases where no parent accompanies the child.

(2) To visit in the homes, as far as practicable, in order to interview parents in regard to the following out of any advice given by the doctor, and to instruct the mother in simple methods of treatment of such maladies as *e.g.* sore heads due to pediculosis.

(3) To visit the schools periodically, and to examine, for instance, the heads of all the children for pediculosis and ringworm, to see children suffering from sores of all kinds, and from running ears, and to report the same to the school medical officer, supplementing in this way the periodical visits of the medical staff to the schools.

(4) To attend at the School Clinic, if such exists, to assist in the treatment carried on there, and especially the daily treatment of running ears.

(5) From time to time in the course of special investigations, the nurse will be of much service for the purpose of making inquiries in the home, *e.g.* in respect to epileptic and other groups of school children in connection with which special information is required. Preliminary investigations of the nurse in instances of this sort will save the medical officer much time, and upon viewing the reports of the nurse he can then decide what

cases he needs to see more particularly himself. Her services may be very useful, too, in connection with the examination of children prior to their return to school after infectious diseases. She may be required, for instance, to swab the throats of children from infected homes when it seems preferable or necessary to visit these cases at home rather than to send for them to attend at the School Clinic.

The school nurse, like the school doctor, should be endowed with a large degree of patience, and be tactful and kindly in handling both parents and children. Upon such qualifications more than upon any others will depend the success of medical inspection and treatment.

CHAPTER XI

THE PROVISION OF SCHOOL MEALS

History—The feeding of school children abroad—Education (Provision of Meals) Act, 1907—Practical working—Selection of Children—Place for provision of meal—Character of meal—Cost—Serving—Difficulties and objections.

WE have seen how in every direction there is need to attend to the physical condition of the child before any attempt is made to give any kind of formal instruction, and we have seen, too, how frequently this rule has been entirely or in part overlooked, and how severely the child has sometimes suffered in consequence. Not only has the child suffered physically, but the educational result has been woefully poor, and the return for all the time and money expended has been of the most meagre description. And if this be true of lack of attention to the physical condition generally, more especially is it true of lack of attention to the adequate nourishment of the child. Into the question of the extent of bad nutrition among children and of its causes we have entered sufficiently in a previous chapter; we have seen how widespread this is, how urgent is the requirement that, from the point of view both of the individual child and of the nation, vigorous and effective steps should be taken to insure to each child a physique as perfect as it is possible to obtain. Among the steps necessary to be taken, that of ascertaining that

the child receives sufficient food, and of right quality, is clearly the most urgent. It is of paramount importance, of course, from the day of birth and through infancy, but this aspect of the question is not within our province; we are concerned only with the child as we find it in the school. In this chapter, then, we shall give some account of the methods which have been adopted both in this country and abroad to deal with the underfed child, and we shall discuss some of the difficult problems which the subject necessarily raises. Further, we shall find how much more is involved in the matter than merely the providing of food to the children, how questions of considerable educational interest arise, lifting indeed the whole subject on to a plane considerably higher than that upon which it is usually placed.

History of the Movement

Apart from the operations of the Poor Law, the claims of the underfed child may be said to have been officially recognized for the first time by the appointment in March, 1905, of the Inter-Departmental Committee on Medical Inspection and Feeding of Children attending Public Elementary Schools. The terms of this Committee's reference enabled them to find out what exactly was being done for these children up to that date. Their inquiries showed that in nearly all the larger centres voluntary organizations of one kind or another made some sort of attempt to grapple with the problem, but it was clear that the ground was at best but partially covered, and that the efforts were usually spasmodic. In only very exceptional instances did the Education Authority as such interest themselves in the arrangements made for the feeding of the children. Manchester

was a notable exception, however, since the old School Board took for many years an active part in the arrangements made. The Inter-Departmental Committee in its Recommendations laid stress upon the necessity of the Local Education Authority being not only in close touch with all agencies for feeding the children, but expressed the opinion that members of that Authority should serve on any Committee formed for this purpose, and they insisted also upon the need for such an organization to be permanent, and so ready to take action immediately necessity should arise. The failure of voluntary effort to deal with this national question was so obvious that even while the Inter-Departmental Committee were making inquiries the hand of the Local Government Board was forced, and as a consequence, the Relief (School Children) Order, 1906, was issued, which empowered the Guardians to provide meals for underfed children, and to consider such relief as given by way of loan to the father. A circular was at the same time issued by the Board of Education, calling the attention of Local Education Authorities to this Order, urging them to co-operate with the Guardians in the carrying out of its provisions. The Circular pointed out that a child might be sent to school without proper nourishment: "(1) Because the parents are permanently impoverished; or (2) because temporary illness, loss of employment or other unavoidable causes have for the time incapacitated the parents from making necessary provision for the child; or (3) because the parents, though capable of making this provision, have neglected to do so." The Board urged that the children coming under the second of these headings might initially be dealt with by any present voluntary agencies, while those falling under the first and third might well be dealt with by the Guardians. For reasons into which we need not enter here, the Order

was practically a dead letter. It was interesting as an official recognition that something further than voluntary effort was needed in order to deal at all effectually with the underfed child, and it prepared the way for the Education (Provision of Meals) Act, 1907, which is a landmark of great prominence, fixing as it does the responsibility for caring for the physical condition of these children upon the Authority which has compelled them to attend school. The Act is important also as emphasizing the responsibility of the community as a whole towards these children, and it enables that responsibility to be exercised without any of the degradation and disability associated with relief given under the Poor Law.

The Feeding of School Children Abroad

For information on this point we are indebted to the well-known and frequently-quoted Reports of the Sanitary Commissioner of the *Lancet*, published originally in the columns of the *Lancet* and subsequently in pamphlet form.* All that follows is culled from these Reports. Their publication was very timely, and they deserve the closest attention. As will become apparent, the phases through which this country has recently been passing in connection with this question are phases now of historic interest only in places on the Continent.

The School Fund (*caisse des écoles*) has been for many years an institution in France, an Act permitting of its formation in each Commune dating as far back as 1867. This fund was provided for by subscriptions obtained from voluntary sources and subventions from the State, and

* "The Free Feeding of School Children": A Reprint of the Reports, by the Special Sanitary Commissioner of the *Lancet*. (London: The *Lancet*, 1907.)

was used, in part, from its initiation to provide assistance in improving the physical condition of the children. In 1882 the establishment throughout France of these *caisses des écoles* was made compulsory. When, then, the question of providing meals for school children arose, it was to these school funds that the Authorities naturally turned, and in 1881, in the Montmartre district of Paris, the first school canteens (*cantines scholaires*) were established and a hot mid-day meal provided, chiefly for those who could not afford to pay, but provision was made also for those willing to contribute. The provision of meals to school children has now become universal throughout France, and as the Report states, speaking of the arrangements in Paris, "The principle now adopted is to encourage all the children, whether poor or not, to eat their meals together." There is much variation in different districts in the proportion of children who are either fed free or whose parents contribute in part or in whole, but the general tendency is clearly for fewer to pay.

The cooking, it need hardly be added, is reported as excellent, the masters or mistresses, as the case may be, frequently take their dinner with the children, and every advantage is taken of the occasion from an educational point of view. The Report gives some interesting details of the arrangements at Nice, the special feature at this town being that a meal is provided by the municipality for all the children who attend the "maternal" school, *i.e.* children between the ages of three and six years. At Mentone it is interesting to note that the "Authorities have determined to provide kitchens and all that is required for feeding all the pupils whenever they build a new school."

One must, however, turn to Italy for object lessons of an advanced character in regard to the feeding of school children. In Milan the work was originally in the hands

of "voluntary" associations, "committees of patronage" as they are called, and later these were subsidised by the Authority, but it was soon found that the Authority must do the work itself. The meals at first provided appear to have been of a poor nature, but hot meals are now being introduced, and the necessary kitchens and dining-rooms built in connection with the new schools. At the time the Report was written, viz. October, 1906, one-half of the children went home to their meals, one-third of the school population received the mid-day meal free at school, while the remainder, approximately one-fifth of the school population, also remained at school for dinner, but paid for the meal. The number of meals given gratuitously was tending steadily to increase.

To Vercelli, however, one has to turn to find a system for providing meals for school children consistently and logically carried out. The whole history of the movement in that town, a town of approximately 30,000 inhabitants, is of great interest; we can, however, only indicate the main features. The provision of school meals was not undertaken on account of anything wrong in the physique of the children, but on educational grounds. The Education Authority of the town appear to have been well satisfied with the "instruction" the children received, but not with their "education," and it was decided that the children should remain at school and "be taught how to behave during recreation hours and at table." Attendance at the school meal was therefore made compulsory except upon the production of a medical certificate. Not more than 10 per cent. of the children were excused. Similarly, a very thorough system is in force at San Remo, and arrangements are being made to provide a mid-day meal for all children, rich and poor alike.

The Education (Provision of Meals) Act, 1907

Returning now to our own country, the Education (Provision of Meals) Act, 1907, has conferred powers upon Local Authorities for dealing to a large extent with the most important part of the problem, though the powers so far given are not such, as we shall see, to enable it to be grappled with in as thorough a manner as in many places abroad. The Act permits of the formation of a School Canteen Committee, a committee which may be composed entirely of members of the Authority, or of such members acting in combination with the Committee of any voluntary association for the provision of school meals. It permits the Local Authority also to provide whatever may be necessary in the way of buildings, apparatus, offices, etc., in order to organize, prepare, and serve the meals. The Act, while permitting of the provision of meals for any and all children whose parents are willing to pay the sum determined by the Authority, allows such Authority, moreover, where they are satisfied "that the parent is unable by reason of circumstances other than his own fault to pay the amount," to provide the food also, provided, however, that the sum expended on food does not exceed the amount which would be produced by a halfpenny rate. Full powers then are given under this Act to provide school meals, with no restrictions as to the manner and conditions under which they are served, but with restrictions as to both the class of children whom it is permissible to feed without payment upon the part of the parent and also as to the number of children so fed.

There are not wanting those, of course, who oppose the Act entirely, who believe that to provide for underfed children is no part of the function of the State. In view, however, of what the State has already done, and, above

all, in view of the fact that the State compels underfed children to attend school, to make a principle of this objection does not seem permissible. Indeed, if objectors on this ground are pressed it will usually be found that they admit that what they really object to is a further development of the doctrine of communal responsibility; the principle has already been so amply ceded that it is obviously only a question as to how far it should be put into practice. It will frequently be found also that the objection to State and Municipal responsibility in this direction is only maintained so long as funds from voluntary sources are available. If the question is to be put to the test of principle, indeed, everything seems to point to the responsibility of the State for seeing that the child is in a physical condition of such a kind that it is able to benefit from the education which it is compelled to receive.

It now remains for us to see how far the Act has been made use of, to consider the practical points and difficulties which follow the working of it in practice, how far the ground is covered by it, and what seem to present themselves as lines along which development may take place in the future. The Act had up to the end of February, 1909, been adopted by eighty-nine Local Education Authorities; the extent to which it is carried out, and the efficiency with which it is worked varies, however, greatly. This is necessarily the case where such diverse views obtain as to the spirit in which the whole subject should be approached. In the main the provision of meals for school children on the part of the Local Authority is looked upon as a measure to be adopted as a last resource, and even if undertaken by them, to be kept within the smallest compass possible. There are not wanting those, however, who see in this new function of the State an opportunity to be taken advantage of to the utmost.

The administration of the Act will necessarily, then, depend upon the light in which a given Authority views it.

To describe the various methods by which the Act is carried out in different places would clearly be quite impossible, and considering how tentative many of these methods are, no useful object would be gained in so doing. Our best plan will probably be to take up seriatim the main points which arise in the administration of the Act, points concerned on the one hand with questions of principle, and on the other with methods and machinery.

Although, as we have noted, the Act makes no restrictions as to the number of children fed, so long as the cost is defrayed by the parents, still for practical purposes we may consider it as put into force for "underfed" children only, the so-called "necessitous" children; the machinery in the first place, at any rate, will be suited to their requirements.

In connection with this the question will at once arise, who are these 'necessitous" children? How are they to be determined? Who is to be the judge of their physical condition, and of their necessity? This selection of the children who are to be fed is by no means easy. Take the physical condition first as a test of a child being underfed. There are no doubt cases where one can say at once this is a starving child, or, at any rate, a child habitually underfed. But by no means the majority of the children who are ill-nourished can be disposed of in this ready way; in them the question of unsuitability of food is inextricably interwoven with that of insufficiency, and, indeed, insufficiency of the right kind of food cannot necessarily be differentiated in respect of the injurious effect on the physical condition from insufficiency of the total quantity supplied. Further, as we have seen in a previous chapter, the causes which lead to ill-nutrition are complex. Then

a further difficulty arises if it is held that the feeding of children under this Act should be decided on physical considerations only, since the children who especially require to be fed may be in practically perfect physical condition, the children, say, of a man suddenly thrown out of regular work. Feeding for such may be required to prevent them becoming ill-nourished. The selection of such children, then, would be on the score of poverty; in a great many instances the physical condition and the poverty will coincide; in others the ground of poverty will entitle the child to be fed when the actual physical condition might not, in others again the physical condition would entitle where poverty would not. The practical conclusion we believe to be that, in the machinery adopted for selecting children to be fed, such measures should be taken as will insure that wherever there is poverty, of a degree, of course, to be decided upon by the Local Authority, the child will receive meals; in addition to this there must be facilities for making inquiries into the case of every child who is not found to come into this category, but whose physical condition suggests that it is underfed, even though there may be a sufficient family income.

The Selection of the Children

The methods of selection and of investigation adopted have been very various; those adopted by the city of Bradford, where perhaps a special amount of consideration has been given to this subject, seem to the writer to cover the ground effectively, at any rate, in so far as, under the powers conferred by the Act, the ground is capable of being covered. The onus of making application to the Canteen Committee is placed primarily upon the shoulders of the parent, who makes application through

the teacher in the great majority of instances, though application can be made direct to the Committee by the parent or by any individual on behalf of the parent. Application is not infrequently made by the teacher direct; usually, however, if the teacher is of opinion that a child should receive meals he will interview the mother, and in this way the application really comes from the parent. There are a considerable number of cases, however, where the parents will not apply—in cases of neglect, for instance—and where, if application is going to be made at all, it will have to be independent of the parent. These cases often present difficulties, but wherever there is doubt on the part of a teacher or of any other individual interested in the child, application should be made so that an opportunity of inquiry may be given. It is these children who need to be selected on physical grounds only; ill-nutrition in the children of this class is nearly always associated with other evidences of neglect.

The next question which immediately arises is as to what steps should be taken by the Canteen Committee to decide what course should be followed in each individual case; what inquiries should it make? And having obtained the financial and other particulars of the family, what considerations shall guide the Committee in coming to a decision as to their action? The persons to whom these inquiries are assigned will be determined by local circumstances. Individuals who have been employed in the past by voluntary associations may continue to be so employed by the Canteen Committee; in other cases the help of volunteers may be made use of. Some Canteen Committees will employ the attendance officers, as is done, for example, in Bradford, a plan which is found to work well and to present considerable advantages. The inquiry form must be so drawn up as to include all the financial particulars of the family, and in addition any

special information which may be of service to the Committee in coming to a conclusion as to the action they should take.*

It is clearly necessary to have some standard as to the degree of poverty which should entitle the child to receive free meals. Different scales are adopted by different Committees. The Bradford Canteen Committee deducts the rent from the total weekly earnings of the family, and if, after so doing, there is less than three shillings a head coming in, the child is considered eligible to be fed free. The scale cannot, of course, be rigidly adhered to in every case; special considerations present themselves from time to time, *e.g.* a man may have been out of work for a long period and have many arrears to make up; where the family is very small, rather more elasticity is allowed, since the expenses are in proportion heavier. In those instances where there is a family income above the limit referred to, each case receives very careful consideration. Frequently such cases are referred to the school medical officer for reports as to the physical condition of the child, and according to the circumstances of the case, the meals are either refused entirely, or a payment varying from a halfpenny to the full cost, viz. twopence, is asked. Where the circumstances justify such action free tickets are issued, and at the end of a month a bill is sent in to the parent and the necessary steps taken to recover the cost incurred. It should, however, be stated that the result of making a charge to parents who have the money, but who do not feed their children adequately, is often most unsatisfactory; it means repeatedly that the child is withdrawn from the list. In very many of these cases, recovery by legal means is not practicable; the degree

* See Appendix X. for a copy of the form used by the Bradford Education Committee.

of neglect is not sufficient to make the resort to legal proceedings satisfactory, and as the matter stands to-day there can be little doubt that some children who would greatly benefit from school meals do not receive them. In each case the decision of the Committee holds good for a month, and at the end of that time report is presented and any fresh features brought before the Committee. In many cases where a satisfactory change in the family circumstances takes place during the course of the month, the child is withdrawn voluntarily by the parent.

Place of Service—Character of the Meal

Before discussing further points, it will be advisable to consider what form the meal to be provided should take, whether breakfast or dinner or both. The provision of the breakfast has the advantage of simplicity and of cheapness, but there is a great deal to be said for allowing the meal provided to be the principal meal of the day. Children are usually most hungry at dinner-time, there is more difficulty in cases where the mothers are neglectful in getting the children regularly to the meals if given at breakfast time, there is more hurry in the serving of the meal, and it can be turned much less readily to educational advantage. If one meal only is to be provided, this should be a midday one; in many cases breakfast should be given as well.

The question as to where the meal should be served comes up next for consideration. Here, again, everything will depend upon local conditions, on the numbers and distribution of the children. One may say at once that the work should not be left to caterers in eating-houses or restaurants, except in outlying districts, or where it is not feasible to make other arrangements;

no educational advantage can be expected from such an arrangement. Wherever it can be avoided no part of the school premises used habitually for school purposes should be used. The most satisfactory arrangement, failing a school dining-hall, is probably to use as a dining-room some building, *e.g.* a hall in connection with a Sunday School, or any room in the neighbourhood which may be available and which would serve adjacent schools.

The supply of food to such dining-rooms will again be effected in different ways in different districts. In a small town, where only one such dining-room seemed needed, all arrangements for cooking the meals would probably be made at the dining-room itself, unless arrangements were made with a caterer for the supply of the meals to be served in the dining-room. Where several centres are required, as must be the case in all large towns, a central kitchen seems undoubtedly the best method to adopt, a kitchen fitted up and equipped by the Canteen Committee, who thus have full control over all the food provided, and all the arrangements necessary for its proper distribution. Such is the system adopted in Bradford. The dinners are all prepared at a central kitchen, capable of cooking the necessary dinners for some five or six thousand children, should this be necessary. The dinners, consisting always of two courses, are sent out in receptacles, which insure the food being kept hot for upwards of two hours if necessary, and by means of motor waggons the dinners are distributed to the various dining centres, numbering about twenty in all. At the central kitchen, too, all the washing-up is done. The motor waggons, having distributed the food at the various centres, make a return journey and collect the dirty plates, etc., and bring them back to the central kitchen. The advisability of such a plan will depend, of

course, upon local circumstances, upon the provision for washing up at the dining-rooms, etc., and the cheapest and most efficient method will, of course, be selected.

Menu

The next point is the character of the food to be supplied. If breakfasts only are provided the problem is a simple one. There is very little cooking necessary; at the most this involves only the boiling of milk and the making of porridge. Porridge, with treacle and milk, followed by bread and butter or margarine and milk, hot or cold, is the ideal breakfast from the point of view of food value and cost; but unless there is careful supervision of the children, a large number will not eat the porridge. With a little care, this dislike can, however, easily be overcome. In an experiment on the feeding of forty school children—all of them children from the poorer quarters of the city, and of whom only one, a Scotch boy, was in the habit of having porridge for breakfast—the writer found that on the first day, in spite of giving small helpings and coaxing the children, one-third of them refused to eat the porridge; on the next day, however, there were only two, and these soon fell in with the majority. Where breakfasts are being provided for large numbers, and where there is an absence of careful and individual attention, it is hardly practicable to serve porridge. Failing this, then, breakfast should consist of milk, hot or cold, about half a pint for each child, and bread (brown or white) and butter, margarine, or dripping, with jam as a variety. Such a meal will cost a fraction over one penny per child, varying somewhat according to the number of children served; where porridge replaces some of the bread and

butter the cost is somewhat less. The meal can, of course, be varied; but if the nutritional value is kept up this will always mean an increase in cost. Thus, if cocoa be used instead of milk, the nutritional value will be lowered in proportion as less milk is used, there being but a negligible amount of actual nourishment in the small amount of cocoa used. The bread may be partly replaced by wholemeal currant loaf, but this will cost about as much again as the equivalent quantity of bread. An egg, of course, adds very greatly to the cost of the meal, even though less milk be taken.

The mid-day meal demands careful consideration. Some sort of dinner can, of course, be provided at a very small expense and with very little trouble, but from a nutritional point of view, if from no other, such dinners may be very unsatisfactory. Such is the case, for instance, in regard to the "soup" dinners one often hears about, costing less than a halfpenny per child. It was largely in order to solve the problem of the provision of really satisfactory dinners that the experiment on the feeding of school children already referred to was undertaken. It was desired to draw up a list of two-course dinners, which should be practical as regards their preparation and serving, should be up to a certain standard in regard to the proportion of proteid and fat, would cost between 1*d.* and 1½*d.* for the material used, and would be enjoyed by the children. Acting in conjunction with the writer, a list of seventeen dinners satisfying these conditions was arranged by Miss Marian E. Cuff (Superintendent of Domestic Subjects to the Bradford Education Committee). Especial stress was laid on the proportion of proteid and fat respectively in the dietary, since the proteid or nitrogenous constituent of a diet is of much importance from the point of view of body building, and this is more especially true

in the case of children, where tissue growth is so rapid. Fat, too, is not infrequently insufficiently represented in a child's diet, sugar, in the form of jam or treacle, being often substituted for it. The carbohydrates, as represented by starchy foods and sugar, are usually sufficiently represented, the latter being apt to be given in excess. Any diet in which an adequate quantity of proteid and fat is provided for will probably also contain sufficient of the carbohydrate element.

The total daily amount of proteid necessary for an "average" child of, say, ten years old is between 60 and 70 grms., *i.e.* about $2\frac{1}{2}$ ounces per diem.* The breakfast we have already suggested has a proteid value of approximately 19 grms., *i.e.* $\frac{3}{5}$ ounce, while the average proteid value of the seventeen dinners was found to be 29 grms., *i.e.* 1 ounce each. This leaves 15–20 grms. short of the desired amount, and would be made up at tea, were such a meal to consist of, say, about 6 ounces of bread, weak tea containing about 4 ounces of milk, $\frac{1}{4}$ ounce margarine or jam.

Cost of Meal

In discussing this aspect of the subject, the cost of the actual food provided and that of administration should be kept distinct. The latter will, of course, vary greatly, depending not only upon the character of the meals provided, but on the manner in which they are served, and no useful general statement can be made.

As to the cost of the food, this may be put down, as already stated, at approximately 1*d.* per head for breakfast, and if the dinners given are of the character already

* See "Food and the Principles of Dietetics," Robert Hutchison (London: Arnold, 1906).

discussed, they will cost from 1¼*d.* to 1½*d.* per head. A school dinner worthy of the name cannot be satisfactorily provided at a lower figure.

Serving of the Food

We must now pass to a matter of much moment, viz. the manner in which the dinner should be provided. The principles adopted will apply, of course, equally to school breakfasts. *The meals should be made educational;* the day should be considered to have entirely gone by for the feeding of children like so many small savages, but this kind of treatment of them is unfortunately still prevalent. The meal should be served just as nicely as would be the case in a well-appointed home. The children should be accommodated preferably at tables to hold ten or twelve, the tables properly laid with tablecloths and the necessary implements; a plant or vase of flowers should be in the centre. To each group of children a monitress should be appointed, and supervising the whole should be an adult—a teacher, or otherwise—for, at any rate, every fifty children, with always a teacher in addition in charge of the arrangements as a whole. The actual serving of the food may suitably be done by the caretaker and his wife, or some appropriate man or woman appointed for the purpose. It is important that this duty should be regularly performed by the same person or persons. Any necessary classification of the children will, of course, be carefully attended to; all the little children will be at tables together, so as to insure small helpings being served; any delicate children, or any whom it is difficult to get to eat, will be similarly provided for. Special attention will be paid to such tables as these by the teachers and other adults in charge. The monitresses must, of course, wear suitable

aprons and sleeves, they must have special attention paid to their personal appearance, and they must be carefully trained in their work ; those in charge of the small children will assist in helping to feed them. The meal should on no account be hurried through, and there should be no undue noise or bustle. It need hardly be said that every possible attention must be paid to the personal appearance of the children ; provision must be made either at the school or at the dining-hall, where that is not attached to the school, for insuring clean hands and faces.

The above sketch will show what possibilities the school midday meal affords ; no Authority ought to be satisfied with any arrangements for its service short of the best ; it is not so much money that is needed to insure this, but an appreciation of its necessity, and the taking of the trouble to see that the requirements are followed out. In many places a serious endeavour is being made to carry out the provision of meals on the lines suggested above ; this is not altogether easy when large numbers have to be dealt with, but in the city of Bradford, where upwards of three thousand children are being provided with dinners daily, an endeavour is made to keep the educational side to the fore, though very much in the matter of detail still remains to be done before the system, as carried out there, can be considered as really satisfactory from the educational aspect.

Much divergence of opinion exists as to what part the teacher should take in connection with the midday meal. A teacher should, at any rate, be available for supervising the dining-hall, whether the adults who assist are teachers or not ; the practice in the latter respect is likely to vary much according to local circumstances, but where teachers are employed they should only do so at intervals, and if the majority

volunteer to take their turn no burden falls upon any single individual.

Difficulties and Objections

The free feeding of school children is attended with difficulties which it is not possible to ignore. Such difficulties one would expect to find, since one is dealing with a condition which ought never on any appreciable scale to arise, and which must always be due to either the misfortune or the fault of the parent. Free feeding has, then, always to be looked upon from two points of view, viz. that of the child and that of the parent; hence the complications which arise.

The difficulties are (1) economic, (2) moral, or (3) a combination of both. Many parents cannot at all adequately feed their children; they simply do not receive enough wage to enable them to do so; this may be due to being employed on short time or to irregular work. But, apart from this, there are many men in the country whose habitual wage when in full work is insufficient to enable them to keep their children in physical efficiency. When carrying out the experiment to which reference has already more than once been made in this chapter, a careful calculation was made as to the cost of the breakfasts and dinners provided, both when the food was obtained at wholesale and also at retail prices, and from the figures obtained a calculation was made as to the necessary expenditure upon food for a family of seven persons, the father and mother and five children. I may perhaps with advantage quote here from the Report:—

"Adding up now the cost of each meal, a total of $4\frac{1}{5}d.$ per child per day is obtained. Multiplying this by $7\frac{1}{7}$, as representing the 5 children and the 2 parents,

the total cost for food per day works out at 2*s.* 8*d.*, or of 18*s.* 8*d.* per week. If, further, of the 17 dinners the two cheapest meat and the cheapest vegetarian dinners (including two of the cheese dinners) are chosen, the total cost is brought down to 17*s.* 3½*d.* per week. The cost per week for a similar family, in order to maintain physical efficiency, is given by Seebohn Rowntree at 17*s.* 3*d.*; it is interesting to note how nearly the two estimates approximate. It will be noted that there is nothing extravagant about the diet suggested, and however looked at it must, I think, be admitted that the amount allowed for food (under pre-supposed conditions of city life) cannot be considered unreasonable. It should be noted that the figures are based on the assumption, for example, that margarine at 4*d.* per pound is used, and not fresh butter at 1*s.* 2*d.*, and that meat free from bone is put at the low figure of 6*d.* per pound. Moreover, it is presumed that the mother is a careful and capable manager, that she knows something of food values, and how to lay out money to the best advantage, and that there is no waste."

But the difficulties are due to moral causes also: there may be a sufficient income, but it is wastefully expended, and the child suffers, or else there may be insufficient income due to laziness or other moral defect on the part of the parent. In a survey of these many difficulties there is only one point which seems to stand out quite clearly, and that is, that the child must not suffer; *it must be fed.* This claim of the child must take precedence over all else, and, having satisfied that claim, the closest attention must then be given to the problems presented by the parent. Into the large economic questions raised by the fact that wages are paid inadequate to maintain physical efficiency and into the question of irregular and short time employment,

it is no part of our present business to enter. The child must be fed, and if such subsidizing of industry be necessary, for that is what free feeding amounts to, the underlying causes of so unsatisfactory an economic condition must be simultaneously tackled.

The moral difficulties present problems quite as great. The punishment of the parent, even if it should prove of any service, is only in very rare instances possible to obtain; the degree of neglect is usually not bad enough. If the parent is told he must pay, or if he is sued for meals already provided, the inevitable result is, that in the first case the child is not allowed to attend the meals, and in the second case he is withdrawn from continued attendance. In the general run of cases connected with moral deficiency on the part of the parent, no help can be obtained from the law as it stands to-day. Something really effective might, in some instances, be achieved by the persistent and personal effort of a man or woman who would try and influence the family in the capacity of a friend; but men and women suitable for such service are not easy to find. We are driven to admit, then, that just as on the economic side we may be obliged to put a premium on to the payment of low wages, so, on the moral, we may at times be found to be placing a premium on parental neglect. In the case of the latter, however, as in that of the former, we may hope that so very unsatisfactory a result may compel attention to the underlying causes of the parent's fault, a fault which after all is frequently wrapped up with causes environmental and economic, since parental neglect of the character with which we are dealing would, under healthy and satisfactory conditions of life, practically never be found to exist.

It is interesting to note how attention to the bare

physical condition of the child opens up problems of educational interest; we shall find the same thing is true when speaking of Open-air Schools and when dealing also with school baths. Our idea of what education means is becoming rapidly widened; in fact, we are daily finding out, as did the Education Authority in the town of Vercelli, that excellent though the "instruction" provided for our children may be, they are nevertheless lacking in "education." It will, we believe, become clear that the advantage of the midday meal cannot long be confined to merely "necessitous" children. We shall have made a great stride in the education of our children when we shall have arranged for them to go to school for the day; when each school has its own well-equipped kitchen and dining-hall; when refinement in the cooking and in the service of the food and the inculcation of good manners and courtesy will be a part of our educational system of which we shall not be the least proud. When this time arrives, the economic objections which hold to-day to the free feeding of some children will have disappeared, the struggling parent just able to keep his children above the "necessitous" line will share in any benefit received by the careless and indifferent parent. No doubt a number of years will elapse before we see this ideal universally carried out, but it is a necessary outcome of the newer and broader and deeper views as to the true meaning of education; on all sides, however, there is abundant evidence that this new outlook is steadily influencing educational thought and practice.

CHAPTER XII

SCHOOL BATHS AND BATHING

Functions of the school bath—The shower bath—The swimming bath—Difficulties and objections.

THE question to be discussed in this chapter is one that has come much more considerably to the fore in this country during the past few years, though it has received for many years past very close attention abroad, perhaps more particularly in Germany. That the subject should be receiving this attention is another evidence of the fuller and wider interpretation which is being given to the meaning of the word "education."

Functions of the School Bath

School baths are needed to fulfil three main functions.

(1) *To insure cleanliness.*—The necessity of the school bath from this point of view has been abundantly proved in a previous chapter on the physical condition of school children. The bathing, at least weekly, of many of the children from the poorer quarters of the town is urgently required. Facilities in many of the houses from which they come do not exist for a thorough-going hot bath, and any one acquainted with the condition of the children obtaining in a school situated in the poorer quarters of a city, cannot but be impressed with the obvious fact that before any instruction of the children is attempted they

need, so soon as they have been properly fed, to be thoroughly washed. Our elementary school system has, perhaps, no greater function than to develop in a child the feeling of self-respect; so long as children sit in school in as dirty a condition as may frequently be found to-day, this, the first of lessons, remains untaught.

(2) *To invigorate the body and to maintain and increase the physical, mental, and moral health.*—Bathing, properly carried out, fulfils a great function in this direction, and even if all children came to school clean, this effect of the school bath would remain an unanswerable argument in its favour. The skin is an important organ of the body, and freedom for the full exercise of its functions has more bearing on mental alertness and moral brightness in children than is sometimes supposed.

(3) *To provide a valuable means of physical exercise, and to teach the art of swimming, life-saving, etc.*—This function of the school bath is one of the first importance, at present, however, but inadequately realized. Further reference to it will be made when speaking of the swimming bath.

In order to secure the above advantages three main types of baths present themselves for consideration, each with their separate utility—the slipper bath, the shower bath, the swimming bath. The first object of school bathing, as suggested above, is fulfilled by the slipper and shower bath; the second object by the shower and swimming bath; the third of course by the swimming bath only.

The slipper bath needs but brief reference. It is of course excellent for cleansing purposes, and in cases of extreme dirt has advantages over any other kind of bath. It may usefully be installed along with the shower bath as an adjunct to a swimming bath, but, generally speaking, its place is best taken by a shower bath, which fulfils

all the functions of the slipper, and has many advantages over it. The slipper bath takes up much room and much water, and the advantages of a final cold douche cannot be obtained from it. The shower-bath system and the swimming bath are, then, the two forms of baths to which we shall devote our attention.

The Shower Bath

For experience in connection with the working of the shower-bath system, and for a knowledge of the advantages to be derived from it, we have once again to go outside our own country. To Germany we must turn in particular, for in that country bathing arrangements exist in almost all towns, both large and small. For an interesting account of the arrangements in a number of these towns, we are indebted to a Report presented to the Education Committee of the London County Council by the Medical Officer (Education), Dr. James Kerr, and the Assistant-Education Adviser, Dr. Frank Rose. Detailed accounts are given of the construction of the baths, the arrangements made for bathing, the advantages claimed, and the difficulties encountered. The principles of construction may be said to be the same in all, though there is a great variety in the manner in which these are carried out. Thus, as the Report points out, the bath-room may be a more or less ill-lit concreted cellar, or a beautiful marble-lined, light, and airy room. There may be simply forms upon which the children may desposit their clothes, or each child may have its separate dressing-box. The showers may be situated, some twenty or thirty of them at intervals, over a slightly sloping concrete floor, or over a shallow trough, or a separate compartment, fitted with a rose shower, may be arranged for each child. While there is no need

for over elaboration, lightness, airiness, a sense of space, and a liberal use of white tiling or its equivalent, with provision for all reasonable privacy in dressing and undressing, is rightly demanded, and the arrangements should allow of efficient supervision. A separate bathing-cell for each child has little advantage for the majority of children, though a certain number of such cells should be provided for the older girls. The educational nature of the bathing must be always kept well in view in all the arrangements made.

The method of using such a bath arranged for, say, a batch of twenty children at one time, would be as follows: The children would undress, each in their separate dressing-boxes, which need, however, only be divided one from the other by partitions, and which should have a canvas curtain in front, which can be readily unhooked when the child leaves the box, and hooked on to the side. Each child stands under a rose, and is provided with soap, a flannel, or its equivalent, and scrubbing brush if required. The water will have been raised to the desired temperature in the mixer, and a hot shower is then given while the children wash themselves thoroughly all over. During the bathing the temperature of the shower will have fallen, and a short, sharp, cold shower should end the bath. The children should briskly dry themselves, and quickly dress; the bathing of a batch of children, from start to finish, should not occupy more than half an hour.

In this way it will be seen that if the bath is used for two hours in the morning, and for two hours in the afternoon (the last half-hour of each session being left free), one hundred and sixty children can be bathed each day, when twenty are arranged for in each batch, thus giving a total for the week of eight hundred. It is clear, then, that a simple installation of this kind will allow for the

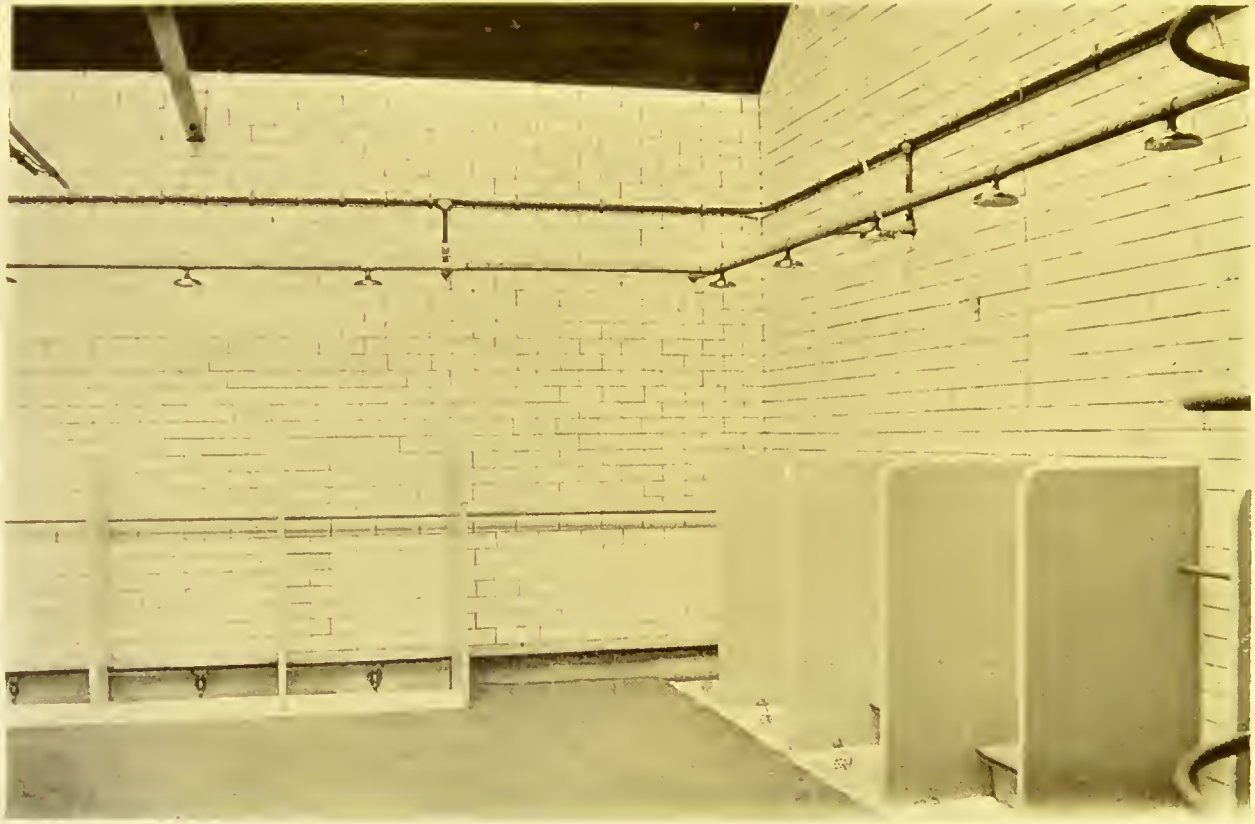


FIG. 9. SHOWER BATH INSTALLATION AT KNOLLS GREEN COUNTRY SCHOOL. (MANCHESTER EDUCATION AUTHORITY)

bathing of all the children, once a week, in a very large school.

The system has been introduced into a very few schools at present in England. In the city of Bradford there are a few installations in connection with the swimming baths and in connection with one or two of the schools. The system is most urgently needed in the schools of the poorer districts. Unfortunately in some of these the facilities for its introduction are not good. A reproduction of a photograph (kindly provided by Mr. C. W. Wyatt) of the shower baths at the Knolls Green County School (Manchester Education Authority) faces page 210.

The Swimming Bath

The school swimming bath, no doubt on account of its expense, is rarely met with, and yet, were it not for this consideration, there can be no doubt that it should be looked upon as an essential part of the school equipment. It need not necessarily be a large bath, however. It is not easy to overestimate the excellence of swimming as a physical exercise, and the educational advantages to be obtained from the school bath are of much importance if the whole arrangements are carried out from this point of view. Such baths in connection with elementary day schools have been built in but very few towns. Thanks very largely to the advocacy of Miss Margaret Macmillan, to whom in this direction, as in so many others, the school child owes much, excellent examples of these school baths are to be found in the city of Bradford. There are six such baths, a photograph of one of which faces p. 212. These baths, though each attached to one school, are used as centres for adjacent schools. Failing school baths, use should be made of the ordinary

public swimming baths, but it is of great importance that during the time these are used for school children they should be used exclusively for them, and that the educational opportunity which the bathing of the children offers should be taken full advantage of. Children should go to the baths in batches of twenty to thirty, and the following points should receive attention :—

(1) A separate dressing box should be provided for each child.

(2) Each child should wash under a shower, as already detailed, before entering the bath.

(3) Careful individual attention should be given to the children to see that none of them stand shivering on the edge of the bath, and systematic instruction in swimming, diving, etc., must be provided.

(4) After leaving the swimming bath each child should have a short, sharp, cold shower, should be rapidly dried, and should quickly dress.

(5) In the case of the girls carefully fitting caps should be worn. If the hair is wet special attention should be paid to drying it.

(6) A brisk run round the playground when the weather permits should be taken after the bath, and the last batch should, if at all possible, bathe at such a time as to allow of the children being in school for at least half an hour before returning home.

It will be seen how important it is that careful attention should be paid to each child in regard to the proper washing of itself, to the use it makes of the swimming bath, to the way it is dried, and especially to the attention given to the hair. To carry out the bathing efficiently, then, means that a teacher should always accompany each batch of children. The bath attendant is not only usually unqualified for the work from the educational point of view, but the adequate supervision of some thirty

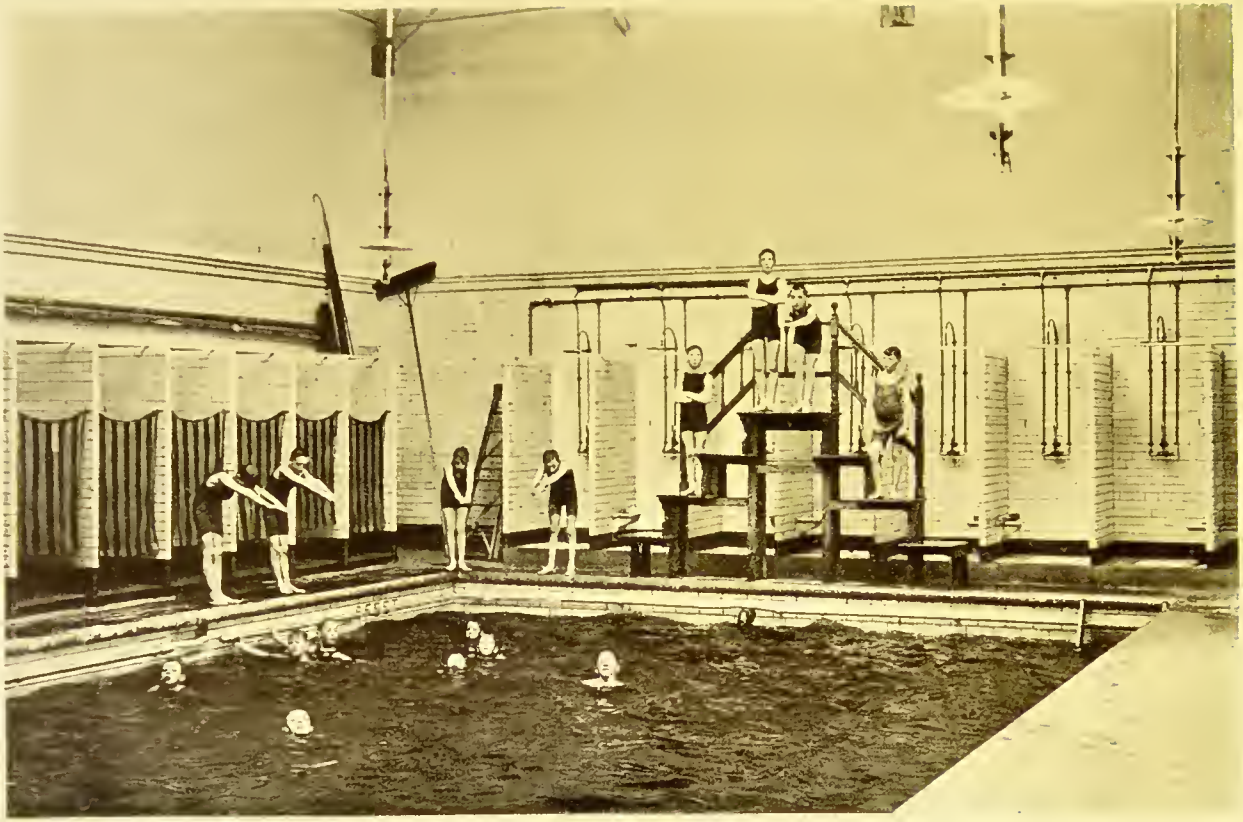


FIG. 10. SCHOOL SWIMMING BATH AND SHOWER BATH. (BRADFORD EDUCATION AUTHORITY)

children is hardly possible, especially when the whole of the time during which the children are supposed to be in the bath should be devoted to the teaching of swimming.

Difficulties and Objections

Objections to attendance at the swimming bath come both from parents and children, though with much greater frequency from the former, and for the most part such objections are not reasonable. Tact and enthusiasm on the part of the head and assistant teachers is of great importance, and the number of children withdrawn will be small in proportion as these qualities are exhibited. Parents are apt to put down every little cold that the child gets to the school bath, and there is some ground for doing so if children are sent home shivering or not properly dried, or if—especially in the case of the younger children through insufficient attention—the child is not properly dressed. On the part of the children objection is only likely to be raised until they have become accustomed to the bath, though in some cases the very right and natural aversion to showing their scant and poor underclothing may play some part. Undoubtedly, on the other hand, school bathing has a good effect in regard to clothing, and the mothers, knowing the children will be bathed, are likely to take more care in regard to their clothing. Apart from unreasonable objections, there may be, of course, valid medical grounds against individual children bathing, and the medical inspection of each child when duly carried out will make it possible to determine which children should not be bathed at all and which must not use the swimming bath. Thus special attention will be paid to children with any lung or heart affection, to

those with any ear disease, to those suffering from any skin affection, and to children who are simply "delicate," or in whom the circulation is naturally very poor. Indeed, the bathing of the children is a matter over which it is not possible to be too careful so as to avoid all grounds of complaint, and in this way to be enabled to insure that the maximum number of children avail themselves of this part of the school curriculum, so important alike from an educational as from a physical standpoint.

The arrangements for school bathing should apply as far as possible to all children, the younger ones using the swimming bath as well as the older. There is, indeed, no need whatever to overlook the infants, and for them it will be found a great advantage to make the trough of the shower-bath sufficiently deep—say twelve or eighteen inches—so that it can be used as a bath for them where they can splash about to their hearts' content. Such is a most excellent form of physical exercise, and one which they can readily be trained greatly to appreciate.

The cost is not great in the case of shower baths, and the return for the money spent a particularly good one. We may well here quote the Report already referred to in regard to the school baths at Cologne, where the writers of the Report were informed that "The influence of school baths in promoting cleanliness is very marked, not only with regard to the condition of the body, but also of the clothes. An increase in the children's capacity for work has also been observed. The self-respect of the children has been raised, as they take a pride in the cleanly appearance of themselves and their schoolfellows. The public are grateful for the introduction of school shower-baths. The influence of the habits of cleanliness inculcated at school makes itself felt long after school

life, and has also in many cases favourably affected the home life of the parents."

The establishment of bathing facilities then in connection with public elementary schools would seem, judging from experience, to be followed by substantial advantage.

CHAPTER XIII

PHYSICAL EXERCISES AND GAMES

Introductory—Systems of physical exercise—Physical and educational effects—Where the lesson should be given—The teacher in relation to physical exercises—Relation of physical condition of child—Games—Dancing.

PHYSICAL exercises and games form a special branch of what may be termed the physical education of the child. Physical education is a very comprehensive term, including all that concerns the care of the body, all such questions as relate to food, clothing and cleanliness, and to the formation of good physical habits generally. Physical Education, moreover, must not be looked upon as distinct from other forms of education. So intimate is the connection of one organ of the body with each and all of the others, so dependent is the brain upon the general activities of the body, so intimately associated in development, as we have seen when speaking of the training of the infant, are the cells receiving sensations, governing movement, or producing intellectual and moral results, that one cannot possibly speak of physical education in opposition to or apart from the acquiring of knowledge or of moral ideas. This intimate connection between physical training and intellectual and even moral development is perhaps especially well seen in all forms of handwork, especially those involving active muscular work, such for example as woodwork

and bent-iron work. To watch a class engaged in this work convinces one at once of the impossibility of splitting education up into component parts and placing them in any sort of watertight compartments. It is clearly seen that the exercise, active but not unduly violent, is of great benefit to the body as a whole, that the actual muscles engaged are developed, that mental processes are involved at every step, and that moral qualities find here continual opportunity for expression and development.

But these remarks apply also, though perhaps in not quite so evident a manner, to that great branch of physical education comprised in physical exercises and games. Indeed if, as has sometimes been the case, the attempt is made to look upon physical exercises as a thing apart, to endeavour to develop muscle only, to train the child to perform certain gymnastic feats, then the whole point and meaning of such exercises as part of the education of the child is missed. The maximum benefit so far as the body is concerned will only be obtained as this unity of body, mind and even soul, if we may be allowed the word, be kept always to the fore.

The physical training of the child, more especially under the conditions of town life, necessitates the use of definite systematic exercises. These must not be looked upon as in any way rivals to, or antagonistic to, games; the one form of exercise can in no way take the place of the other; they have each their separate function, and to a large extent their separate effects. Neither must physical exercises be looked upon simply as necessary to correct any bad effects consequent upon the strain of school work. True this makes them all the more necessary, though much of the bad effect of school life to-day is in reality an effect due to specific and removable causes. The bad air, for example, so

common in classrooms can be remedied by the suitable construction and ventilation of such classrooms; and the faulty positions producing round shoulders, lateral curvature or general slackness in the carriage of the body must similarly be prevented by desks and seats suited to the individual child. Physical exercises are not required, that is to say, only as a corrective, but they must be looked upon as essential in the production of a well-balanced body, harmoniously knit together and with precision in its movements.

Systems of Physical Exercise

The far-reaching effect of physical exercises must be borne in mind when adopting a system for application in schools. It is clear that if mere muscular development be the object, a very different system will be desired than if the wider effect is kept in view. Many are the systems which have been in use, differing according to the end in view, and the following summary of them is taken from the Report of the Royal Commission on Physical Training (Scotland):—

"(1) *The Swedish System*, admirable in theory, and nearly perfect in its adaptation of certain exercises to attain certain results, is stated to be defective, inasmuch as it is exhausting, and tends to 'staleness' if thoroughly carried out, and its lack of interest and variety renders it unsuitable as a system to be pursued throughout nine years of school life. But selected exercises from it should form part of a wider and more varied whole.

"(2) *The German System* is said to be remarkable for the development of ambidexterity, which proves valuable in many trades after school life. Objections taken to it are its abnormal development of muscle and

non-athletic tendency, and that it requires the use of heavy apparatus.

"(3) *The Swiss System* has many good points. It aims at skill and activity. Children while at practice sing Tyrolese songs, and its advocates assert that it gives refreshing mental rest after school study. One witness, however, attributed the high rate of heart disease in Switzerland to the use, by the elder boys, of too heavy staves while undergoing the training.

"(4) *In France* there have been frequent changes of system. After the war of 1870 French physical education took the form of gymnastics and military exercises. A full account of the French systems and their results will be found in the evidence of a witness who has made them a special study, and who has had practical experience both of Lycée and University life. A brief summary may be noted here:—gymnastics with apparatus were everywhere rendered obligatory, and the movements in favour of military drill culminated in the creation of military cadet corps in the schools, both primary and secondary. But these cadet corps, known by the name of *bataillons scolaires*, after a brilliant beginning, fell into discredit, and the last of them was suppressed in 1890. The causes of failure seem to have been (*a*) the cost, which was out of all proportion to the results obtained; (*b*) many of the results were unsatisfactory—for instance, the children affected the manners and language of the drill-sergeants, and imported into the playground the phraseology of the barracks, until the deterioration in the manners of the children set the teachers against the system: (*c*) the regular officers also became hostile, for they found that the too early specialization for the child was a bad preparation for the recruit. For a time, private gymnastic societies flourished, and were recruited mainly from the primary

schools, but these aimed less at the increase of the respiratory powers than at the formation of muscle by exercises with apparatus. The system pursued by the private societies is gradually giving way to the *Gymnastique raisonnée*, which is now being adopted both at the school for military instructors at Joinville le Pont and by the primary schools. It is founded on the Swedish plan. British games and sports, it may be added, are finding an increased number of admirers in France.

"(5) *In America* each State has its own system; many are of great variety and excellence. One witness, however, deposed to having observed in them an undue predilection for 'records.'

"(6) *Sandow's system*, valuable as it is stated to be for adults, involves an amount of concentrated attention which does not recommend it for the use of children; but some of the movements, notably the breathing exercises, as we saw them practised at the London Orphan Asylum, produce very good chest development, and may well be incorporated in a model system."

In the past the military idea, on the one hand, has frequently predominated, and, on the other, undue attention has been paid to mere muscular development. The reaction is now perhaps too much towards the scientific side, to the development of a system embodying a series of ideal movements each with its end in view, but which is apt to be lacking in freshness for children. Such a criticism is brought against the Swedish system, but probably this is more true of the Swedish system as practised sometimes in England than to the manner in which it is carried out in the country of its origin. There can, at any rate, be no doubt that it is upon the Swedish system, taking full advantage of its elasticity, that a system of physical exercises for school children should be moulded. Much care is

required to meet the needs of children of different sex and age, and also those of different physical capabilities

Physical and Educational Effects

The kind of exercises required are admirably set forth in the Syllabus of Physical Exercises for Public Elementary Schools issued by the Board of Education.* As pointed out in the Introduction to the Syllabus—

> "Physical Training has, or should have, a twofold effect; on the one hand a physical effect, and on the other a mental and moral effect, which for convenience may be termed educational in the popular sense. The direct results upon the health and physique of the child may be described as the *physical effect.* . . . Exercises, if rightly conducted, also have the effect, not less important, of developing in the children a cheerful and joyous spirit, together with the qualities of alertness, decision, concentration, and perfect control of brain over body. This is, in short, a discipline, and may be termed the *educational effect.*"

The *Physical Effect* is considered in this introductory chapter to the syllabus under three headings, according as the effect is (*a*) on the general nutrition; (*b*) corrective; (*c*) developmental. Exercises benefiting the general nutrition consist principally of massive movements, and these may be either general or special. "*General Massive Movements* are those of the limbs and trunk which involve the whole bony and muscular structure of the body, and quickly and powerfully affect both respiration and the circulation. Types of such exercises are to be found in the natural play movements of children, such as running,

* "The Syllabus of Physical Exercises for Public Elementary Schools, 1909." London: Wyman & Sons.

leaping, and skipping, also in marching, dancing, cycling, and games of all kinds. . . . Among the *Special Massive Movements* may be included the various balance movements, shoulder exercises, and lunges. These have a beneficial effect upon the nervous system, and strengthen the control exercised by the nerve centres over the muscles."

Corrective exercises are such as are designed to combat bodily defects, especially those associated with school work, with faulty positions of the desk, etc.

The *Developmental Effect* is thus spoken of in the Introduction to the Syllabus: "One of the aims of Physical Training is to promote the development of the muscular system and the body as a whole, in order to attain the highest possible degree of all-round physical fitness. Physical Training has also an equally important influence on the development and specialization of the brain cells.

"There are in the brain certain 'centres' or masses of brain matter which preside over co-ordinated movements of all kinds. These centres begin to perform their functions in early life, when the child learns to stand, to walk, and to talk. As new movements are attempted, new centres become active, certain nerve impulses become more or less habitual, and thus new nerve paths are opened up and established, and the connections between the centres in different parts of the brain become increasingly well defined and co-related. It has been found that within reasonable limits the greater the scope of the physical education, the more complex and highly specialized and developed do these centres become."

The *Educational* Effect is of great importance, and it is more definitely aimed at as the child grows older. In the case of the infant it has rightly but comparatively

little place; all that involves strained attention, all that would detract from the frankly physical effect of the exercise, is to be avoided. Hence exercises for infants for the most part fall under the heading of "nutritive" and "breathing" exercises.

The utility of music in connection with physical exercises for young children is based upon the fact that it enhances this physical effect. It assists in the carrying out of the movement, largely removes the necessity for thinking how to perform the act, adds to the pleasure of the exercises—increases, that is to say, their nutritive effect, and that, as we have seen, is the first consideration in the case of infants. As is, however, pointed out in the Report already alluded to, there may be an important educational element even in those exercises frankly designed for their physical effect. There may be great variety in the manner in which such exercises as skipping and hopping and even marching are carried out, great differences in the gracefulness of the action and in the ease with which such action is performed, and to insure these implies an educational process. In older children the teacher will need to be continually on the watch to maintain the educational effect. Thus what at first was a true educational process soon ceases largely to be so, and physical exercises mechanically given by a teacher only half-hearted in the work, rapidly lose their beneficial effect. Moreover, when interest and enjoyment cease to be taken by the children in the exercises, much of the physical effect is lost also. Perhaps no lesson in the curriculum provides a more severe test of the teacher's power of resourcefulness than that of physical exercises.

In regard to the frequency with which Physical Exercises should be taken, it is suggested in the Syllabus that, "in order to obtain the best results from physical

training, it is very desirable that lessons of twenty to thirty minutes should be given as frequently as the curriculum will allow. At least there should be three or four periods in the week when physical exercise should be taken as a regular lesson, and if only a limited time is available in the week for this purpose, frequent lessons of short duration will be found more profitable than longer lessons given at greater intervals (*e.g.* four lessons of fifteen minutes each are to be preferred to two lessons of half an hour)." In addition, however, to these more formal lessons frequent opportunity should be taken for carrying out more especially the "nutritive" exercises, since these will be found most valuable during the ordinary school work. Such can be given as a recreation while the children remain in their places, simple arm and bending-back movements being readily carried out; breathing exercises, too, can in this way be given at odd moments. Or the more massive forms of nutritive exercises may be availed of, and the class may be marched round the classroom or sent into the playground or hall for a similar purpose.

As already stated, physical exercises need to be carefully graduated to meet the sex and age of the children. Speaking generally, apparatus is neither required nor advisable in the elementary school, though staves or light dumb-bells may be introduced for the use of the older boys and girls, and, indeed, every effort should be made to make physical exercises attractive to these older children, since they are of especial value to them. At the age of fourteen and over simple gymnastic apparatus may be introduced.

As to the *place* where physical exercises should be given, there can be no question that when the weather permits there is no place like the open air. There are many days, however, when the wind or rain or both

prevent their being taken out of doors; there are days, too, when the sun is too hot to make out-of-door exercises advisable. A covered shed can, under these conditions, often be used, but not infrequently in winter it is necessary to be quite under cover. A large hall then is required, such as is often attached to the school, and as we shall see in a later chapter this function of the school hall needs to be kept well to the fore when planning the school. The central hall, so common in many schools, is ill-adapted for this purpose for reasons to be subsequently considered. To avoid disturbing other classes and to avoid raising dust in the school, as well as to make really efficient ventilation possible—a particularly important point in connection with the taking of physical exercises—the hall should be detached from the main part of the school building. This, too, enables it to be more satisfactorily used for the purposes of classes for physical exercises, held, for instance, in connection with the evening school.

Three important points in connection with physical exercises remain to be dealt with. The first is in regard to the *teacher*. The question at once arises as to how far the ordinary class teacher should be expected to be able to give physical exercises. As to the exact system adopted in this respect, no hard and fast line can be laid down. All who enter the teaching profession may reasonably be expected to be capable, physically and otherwise, of conducting these lessons. A large number of teachers already in the profession are able satisfactorily to give them, or could probably render themselves proficient in this respect. There will, however, always be a need for the expert in this branch, and the plan adopted by some Education Authorities would appear to be the best one, namely, to have on their staff one or more such experts who can go round to different schools, give model lessons

and help to keep up the standard generally. Such an expert would be available also for giving courses of lessons to the teachers, and would himself or herself actually be responsible for the physical training of the boys and girls in the secondary schools and of all pupils preparing to become teachers.

Then the next point of moment relates to the question of the *physical condition* of the children who are to receive these physical exercises. This aspect of the subject has received inadequate attention in the past. It is clear that all physical exercises make considerable demands upon the child, and damage may be done if children physically unfit are made to undergo them. There are few, however, who would not benefit by physical exercises of the right kind and not excessive in amount, so that the case for careful examination of the children is all the more clear. The system of medical inspection now being inaugurated will, of course, be linked up with this part of the school curriculum. Especial care is necessary with children suffering from organic disease of the heart and lungs, for instance, or from anæmia, and no good can be expected to follow the practice of physical exercises by underfed children.

Suitable *clothing* and proper *shoes* are essential in order to carry out physical exercises in a satisfactory manner. In the case of the majority of elementary schools practically no special attention is paid to either of these points, and indeed it seems at present hardly practicable to do so. More, however, might be done, and more probably would be done, if the Authority realized the importance of the matter, and in the secondary school, at any rate, suitable clothing and shoes should be insisted upon.

Games

Games, as we have said, have a somewhat different function and place from that of physical exercises. They play a great part in maintaining the physical health of the child, and there is need for much more attention to them from the educationist's point of view. It is true that games can be over-organized, but nevertheless satisfactory play is seldom seen among the elementary school children, and this is so because outside the Infants' School so little attention is paid to the question. In many town schools, with their wholly inadequate playgrounds, but little can be done, and apart from this, the elementary school arrangements hardly permit of any progress in this direction. When the need for a more thorough physical education is once grasped, there can be no doubt that opportunity will be found for insuring that the children shall receive it. This requirement adds force to the argument in favour of the change of which we have already spoken, and of which we shall need to speak again—in favour, namely, of children going to school for the day. It will come to be recognized that children cannot be adequately educated during two sharply defined sessions, morning and afternoon. When children attend the whole day at school suitable arrangements can be made to insure an adequate mid-day meal, of which, as we have previously pointed out, full advantage will be taken from the educational standpoint, to insure also adequate rest and, if necessary, sleep, for those children requiring it, and in addition abundant physical exercise of all kinds. When such a change comes about the ordinary school work will be found to have gained greatly; the children will be not only quite as well instructed but in addition far better educated. In every direction, indeed, it is clear that

a wider view needs to be taken of the function of the school.

Further, it may be hoped that the time will come when playing fields will not be looked upon as an impossible luxury: in large cities and towns it is for the most part not possible to provide these, but on the outskirts, at any rate, it would be often quite feasible to do so, if only their place in the school curriculum were recognized.

We have so far spoken of physical exercises and games chiefly in relation to the elementary school, but all that has been said holds with equal force in the case of secondary schools. Here, if anything, still greater attention needs to be paid to this aspect of education, since so much time is spent in book learning and other close work. In many secondary schools the physical requirements of the pupils are, however, seriously overlooked, and usually on the plea of lack of time. It need scarcely be pointed out that such a policy is a very short-sighted one and defeats its own ends. The secondary school, whether for boys or girls, requires as an essential part of its equipment a good gymnasium, swimming bath and playing field. Careful medical inspection should, however, be linked with physical exercise of all kinds, such as has for long been carried out in many of the large public schools.

It is not possible, in the space at our disposal, to go more fully into the various forms which physical exercise may take; to one, however, which is in some measure a sort of connecting link between physical exercises and games, we may more especially allude, namely dancing. This is for children an excellent form of exercise, and especially in the healthful and beautiful old folk dances now being revived, folk dances belonging to all nationalities. These dances form an important part of the

physical exercises as practised more particularly in the city of New York;* and they are, as Morris dances, being gradually introduced into our own schools, and with them, also, many of the old country games. They have an excellent physical effect, due not only to the active exercise involved, but also to the vigour and delight with which the children enter into them. As corrective exercises, too, involving as they do perfect muscular co-ordinations, they are of great value. They can hardly be excelled for cultivating in children those ideas of beauty and rhythm, which, solely due to lack of education and opportunity for expression, are so rare among the town children of to-day.

* See "The Place and Limitations of Folk Dancing as an Agency in Physical Training," Luther H. Gulick, M.D. Transactions of Second International Congress on School Hygiene. (London: Royal Sanitary Institute. 1908.)

CHAPTER XIV

THE OPEN-AIR RECOVERY SCHOOL

Introductory—History of movement abroad and in England—Essentials and requirements—Site and surroundings—The school building—Equipment of the school—Size—Staffing—The school curriculum—Selection of the children—Duration of play—Feeding and clothing—Physical exercises—Bathing arrangements—Results, physical and educational—Cost.

THE differentiation of the elementary school child has been a very gradual process. The Act of 1870 was founded on the assumption that, given a system, all children could avail themselves of it. Such a generalization was, no doubt, necessary; to make provision for the great majority was obviously the first step. But experience and a wider appreciation of the meaning of education has shown increasingly how impossible it is to treat children in the mass if satisfactory results are to be obtained, and the process of differentiation which has been gradually taking place, leading to the separating off, in the first place, of the more obviously distinct groups, seems likely to be carried in the near future very considerably further.

The blind and deaf children was the first class to be separately treated, and the Elementary Education (Blind and Deaf Children) Act, 1893, made it compulsory upon all Local Authorities to see that satisfactory provision was made for all blind and deaf children within

their area. In 1899 was passed the Elementary Education (Defective and Epileptic Children) Act, which was, however, a permissive Act only, and which permitted local education authorities, as we have already seen in Chapter VII., to make provision, either by means of day schools or residential schools, for mentally deficient or, as they are now known, feeble-minded children, and also for those physically defective.

Another example of the process of differentiation in a different and less distinct direction is to be seen in the great change which has been passing over the treatment of children in the Infant School where, as we have seen in Chapter IX., a steady movement has been setting in to treat the infant as an infant in the way demanded by the laws of physiological development, and not simply as a young adult. The movement, too, towards smaller classes is, of course, another expression of this same need for more attention to the individual child. From the intellectual standpoint we have already seen in Chapter VI. how necessary, within limits, is the separation of the "backward" children from those of more ordinary intelligence, and how in some of the cities in Germany this need has been met by the establishment of the Förderklassen, a system of special classes distinct from the ordinary standards.

In this chapter we shall consider another type of children needing separate consideration, children who, from physical defect of one kind or another, are unable to profit as they should do from the instruction given in the ordinary elementary school, or for whom the surroundings and curriculum of the ordinary school are not suited. The majority of such children have no definite illness, they are rather the "delicate" and debilitated, and this condition is for the most part closely connected with the influences of town or city

life. Among the more definite physical defects from which these children suffer will be found the following in varying combinations:—anæmia; malnutrition; enlarged glands; enlarged tonsils; adenoids; ear discharge; blepharitis; pulmonary conditions, such as bronchial catarrh, bronchitis, phthisis, conditions left after pleurisy or empyæma; disease of the heart; tuberculosis in various forms, of bones, joints, glands, or as tuberculous peritonitis; nervous affections, including "functional" conditions, such as hysteria; and chorea.

Mental backwardness is often closely associated with the physical defect, and is frequently, indeed, actually caused by it. This may be readily understood, when it is remembered that the causes of the physical defect have often been operating continuously from infancy, and in some cases from the day of birth, and for this reason a considerable proportion of these children is to be found in the lower standards. It must not, however, be assumed that all children physically debilitated are backward mentally; such is sometimes far from being the case. They may, on the contrary, be particularly sharp at their school work, and in their keenness to excel, their physical condition may suffer. This class of child is found more especially among the upper standards and among children from better-class homes.

For all children, then, such as the above the ordinary school is not suited; its surroundings are often unsatisfactory, but, equally important, its curriculum is unsuitable. They need fresh air at all times—not merely when they happen to be out of doors—good food, sufficient rest, exercise suitable in kind and amount, less formal instruction, together with any medical treatment which may be indicated.

History of the Movement

It is to meet these requirements that the Open-Air Recovery School, commonly known by the shorter title of "Open-Air School," has been established. Its home is in Germany, where, at Charlottenburg in 1904, the first Open-Air School was opened. An excellent account of this school is given in "The Children of the Nation," by Sir John Gorst, written shortly after his visit to the school about a year after its inception.* We are, however, more especially indebted to the Education Committee of the London County Council for bringing this question prominently before the educational authorities of this country.†

The first experiment, as already stated, was made at Charlottenburg in 1904, and was the direct result of the association together of the educationist and of the medical officer. As Dr. Rose says, "the realization of the Charlottenburg experiment was assisted by the fact that a large number of backward children who were about to be removed from the ordinary elementary schools to special backward classes, were found to be in a debilitated state owing to anæmia and various diseases in an incipient stage. This afforded an ideal opportunity for the co-operation of the school doctor and the educationist. The school doctor insisted on the necessity of open-air treatment, suitable surroundings, careful supervision, feeding and exercise. The teacher modified the ordinary school instruction to meet the

* "The Children of the Nation," Sir J. E. Gorst. (London: Methuen. 1906.)

† In May, 1908, the Committee published the Report of the Assistant Educational Adviser, Dr. Frederick Rose, giving details of the principal open air schools in Germany, and many of the following particulars are taken from that Report.

altered conditions. He lowered the hours of formal instruction by about half, and reduced the classes to about twenty-five children per teacher. He proposed, further, to abandon some of the mere memory ballast in the elementary curriculum and to impart his instruction in a more concrete manner, bringing it into touch with actual out-door conditions. These considerations indicate the true nature of the Open-Air Recovery School. It is a new type of school where sick children are to be cured and taught at the same time. If such children are to be kept in the ordinary schools, they may be instructed, but their ailments will not be removed. If they are treated in convalescent homes only, their instruction suffers. The Open-Air Recovery School solves the difficulty."

In structure the school at Charlottenburg was as simple as possible, consisting of (1) a plain shed for use when the weather was wet, either for teaching purposes or for use during the period of rest, (2) a more substantial school building for use during very cold or bad weather, (3) large sheds for meals or other purposes, (4) a number of small sheds to hold a class of children when protection from rain or sun might be necessary. The daily life in the school is thus described briefly by Dr. Rose:—

"The children arrive about a quarter to eight, those who live near come on foot, others come by the electric trams in special cars, the season ticket for which amounts to 3*s.* per month. After their arrival the children receive a bowl of soup and a slice of bread and butter. Two classes commence at eight o'clock, with an interval of five minutes after every half-hour's instruction. Instruction is never given for more than two consecutive hours. At ten o'clock they receive one or two glasses of milk and another slice of bread and butter. Then two other classes receive instruction, whilst the other children play about, perform gymnastic exercises or manual

work, or read. Dinner is served at half past twelve, and consists of about three ounces of meat with vegetables and soup. After dinner the children rest or sleep for two hours. For this purpose folding chairs and rugs are provided. Absolute quietness is required. At three o'clock the remaining classes receive instruction, and at four, milk, rye bread and jam are distributed. In some cases, instruction is given after this, but generally speaking, for the majority of the children the afternoon is principally devoted to informal instruction and play. The last meal, consisting of soup and bread and butter, is given at a quarter to seven, before they return home. The children return as they come, some on foot, and some with the electric trams."

In the same report interesting particulars are given of schools at Mühlhausen, at M. Gladbach near Cologne, and at Elberfeld: the general principles of them all are the same, principles to which we have already alluded. To some of the more detailed points we shall need to return presently.

Open-Air Schools in England

The first school to be started in England was the one carried on under the London County Council at Bostall Wood towards the end of the summer of 1907. A full report of this experiment is given in the Report of the Education Committee already referred to. When making application to the Board of Education for the establishment of the school, it was suggested that the School might be certified under section 2 (1) (C) of the Elementary Education (Defective and Epileptic Children) Act, 1899, since such certification would allow not only of a larger grant, but would give more freedom both as to the curriculum and in the attention to the physical needs

of the individual children. Moreover, by this Act the number of children to each teacher is limited to a maximum of twenty-five, which for a school of this character is a great advantage. The Board of Education agreed to certification under the Act suggested, and the London County Council accepted the offer of the Royal Arsenal Co-operative Society to lend their woods and recreation ground at Bostall Wood for a period of three months, and in addition voted £400 for the maintenance of the School. At the same time a subscription list was opened to defray the cost of food and clothing in cases where the poverty of the parents should make this necessary.

The School was opened on July 22, 1907, with 113 children in attendance, 49 boys and 64 girls, and remained open for 13 weeks.

In the following summer (1908) this experiment in London was still further developed, and three similar experimental schools were opened in the provinces, namely at Norwich, Halifax, and Bradford respectively. The school at Norwich, it is interesting to note, was opened for mentally defective children only.

We may now consider in some detail the essentials and the requirements of an open-air school, and this may with advantage be done under the following headings, viz.—

1. The site and surroundings.
2. The school buildings.
3. The equipment of the school.
4. The size of the school.
5. The staffing of the school.
6. The school curriculum.
7. The selection of the children.
8. The duration of the stay.
9. The feeding of the children.
10. The clothing of the children.

FIG. 11. OPEN AIR SCHOOL AT THACKLEY UNDER THE BRADFORD EDUCATION AUTHORITY

The ground plan of the permanent building now in course of construction is shown on page 238

11. Physical exercises and games.
12. Bathing arrangements.
13. The results, physical and educational.
14. The cost of the school.

1. The Site and Surroundings

The site, it goes without saying, must be well removed from the town, and as thoroughly in the open country as is compatible with proximity to a large town. It must be ample enough, as open as possible, and yet with sufficient shelter. A large field in one corner of which the main buildings can be placed, surrounded, as far as possible, by woods and rising ground to form a shelter from the prevailing winds, is the kind of situation required, and can usually be obtained in one spot or another on the outskirts of a large town. An elevated site is to be preferred, and it is essential that the soil should be dry and pervious, with a good natural drainage. The open-air school at Charlottenburg is situated, as are also many of the other schools in Germany previously mentioned, in the heart of the pine-wood.

2. The School Buildings

The one thing essential about these buildings is that they should be simple: this does not mean, however, that they need be built as if intended for temporary buildings only. As has already been pointed out, the lessons, so far as at all practicable, are given in the open air, but there are times when either rain or too great heat make this impossible, and for such occasions sheds are needed, or what will serve a similar purpose, a verandah. There may be several such sheds in different parts of the site according to the requirements of the school. In

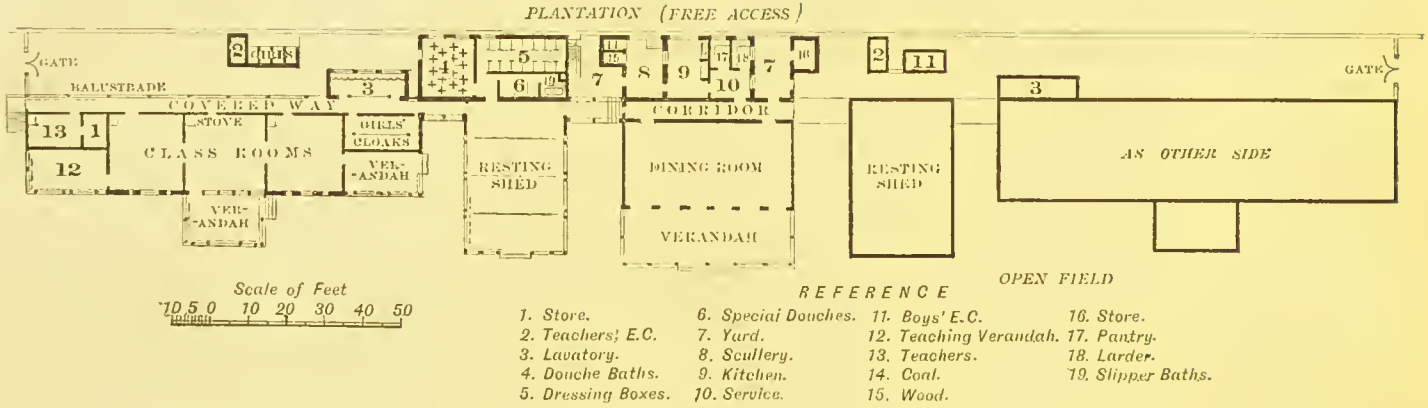


FIG. 12.—Bradford City Council Open-Air School at Thackley. Architect, Mr. R. A. Kirkby, A.R.I.B.A., City Architect, Bradford. From a paper on "Elementary School Planning," by Mr. R. A. Kirkby, A.R.I.B.A., published in *The Builder*, August 21, 1909.

addition to these, however, structures allowing of more shelter will also be necessary, especially if the school is to open in the spring or autumn ; they will be needed not infrequently also in the summer in the more northern latitudes.

The class-rooms should be of the simplest description with ample cross-ventilation, and capable of being efficiently heated. Perhaps no plan is more satisfactory than that in which each class-room opens on to a teaching verandah as shown on the accompanying plan (Fig. 12). There will then be no excuse for the class-room itself to be used unless absolutely necessary. The light portable desks and seats mentioned below can readily be taken from the class-room to the verandah, or *vice versâ*, as the case may be. Into the details of the school building it will hardly be necessary further to enter.

3. The Equipment of the School

This, as one would expect, will be somewhat different from that of the ordinary school. The class-rooms, however, which should allow of 20 square feet of floor space to each child, should be furnished in much the same way as any other class-rooms ; they should accommodate from 20 to 25 children in each. Each child should be supplied with its own desk and seat, which should be separate and constructed in as light a manner as possible consistent with utility ; the chairs, it should be remembered, it will be necessary to carry into the fields and woods. Three sizes at least should be made, so that each child may have the size as nearly as possible appropriate. Simply constructed benches will be required also for manual work. Then, too, provision must be made for the children while resting. For this purpose deck chairs are unsuitable ; for many children they are too small, and, moreover, do not permit of their lying sufficiently flat. A simple kind

of hammock bed, similar to some which have been supplied to the London County Council Open-Air Schools, only collapsible, is, perhaps, the most satisfactory arrangement for this purpose. Each child should have his or her own numbered warm blanket or rug for use while resting. Other points in the equipment will be referred to under separate headings.

4. The Size of the School

Granted that there are the children to be provided for, a fairly large school making provision for, at any rate, say, 120 children is to be preferred to several smaller ones. Classification of the children, and consequently of the teaching, is then much simplified and the cost per head is of course reduced. There is, moreover, a considerable advantage in having children of different ages at the same school, provided the school is sufficiently large to permit of classification, since the older children, both boys and girls, can do much to assist in one way or another in the general and domestic work of the school. Every endeavour should be made to cultivate a family and communal feeling, and since the children at an open-air school remain at school for the day, an excellent opportunity is afforded for doing this. A further advantage of a reasonably large school is that some of the children need the attention of a school nurse, and it is hardly feasible to arrange for a nurse to visit daily if there are only perhaps one or two children requiring her attention.

5. The Staffing of the School

One teacher will be required for every twenty or twenty-five children. A caretaker will, of course, be necessary, who, in addition to attending to the school and

being a handy man about the premises, will assist in the bathing of the boys. In a school of the size suggested two women helpers will be needed, one to do the cooking and one to assist the cook and to help in the bathing of the girls. A nurse will be required to visit daily.

6. The School Curriculum

Here much elasticity should be allowed and appropriate opportunity given for experiments. It must be borne in mind that the children are at the school primarily on account of their physical condition, and all arrangements must be subservient to this fact. The ingenuity of the teacher will be severely taxed, and aptitude for adaptation should be one of the main points looked to when selecting teachers for these schools. Every subject should be presented in as concrete a manner as possible, and full advantage taken of the various objects surrounding the child in the fields and woods. As is being increasingly pointed out by educationists, and as the German open-air schools have demonstrated, many subjects can be well taught in this concrete manner—arithmetic, for example, with measuring tape in hand. There is, too, ample scope for teaching geography by large models, which the children can be taught how to make. As Dr. Rose remarks in his report already referred to, "Relief maps are constructed in sand, the configuration of the surrounding country explained, mountain ranges made to scale, and almost all geographical definitions suitably illustrated. To give but one example—a little rivulet is arranged with natural or artificial supply of water, and the action of the water upon the earth's surface shown with the greatest ease. Tributaries, rapids, streams, lakes, canals, and locks are in this manner explained. Further, the action of running water upon

river banks, the carrying of suspended mineral matter by rivers, the silting up of river beds, the formation of deltas, the cause of floods, the importance of irrigation works, are brought home to the children's minds with the greatest ease."

As regards the arrangement of the time-table, there is room for much elasticity, but the more usual school subjects, such as reading, writing and arithmetic, may well be taken chiefly in the morning, the afternoon being reserved more especially for manual work. There is not at an open-air school, as a matter of fact, any necessarily very hard and fast line between work and play, since rambles in the wood, for example, may well partake of the character of both. The time given strictly to lessons should not exceed about three and a half hours per day, two hours in the morning and an hour and a half in the afternoon. Then time must be allotted to physical exercises, not less than ten minutes per day, with longer lessons twice weekly. Odd minutes for breathing exercises may be taken as often as desired. The rest of the time will be occupied with meals, play and rest. This latter is recognized as being most important, and is a special feature of all open-air schools. One and a half to two hours' rest should be allowed for all the children. The children are very restless at first, but soon get accustomed to remaining quiet, and many fall asleep. The following may be taken to represent approximately the skeleton time-table :—

8.45 A.M.	Breakfast.
9.30–10.30	Ordinary school work.
10.30–10.45	Play.
10.45–11.45	Ordinary school work.
11.45–12.15	Play.
12.15 P.M.	Dinner.
12.45–2.45	Rest.

2.45–3.15	Play.
3.15–4.45	School work. Outdoor lessons, as, for example, nature study, geography, etc.
4.45–5.15	Play.
5.15	Tea.
5.45–6.30	Play.

7. The Selection of the Children

The kind of children for whom the Open-Air School is intended has already been intimated. Though children from the poorer districts will predominate, still it must always be remembered that the physical condition, and not the poverty of the child, is the passport to the Open-Air School. In the children who attended the Bostall Wood Open-Air School, the following ailments were discovered on examination :—

Glands in neck palpably enlarged	63
Pallor sufficiently great to indicate considerable anæmia	47
Enlarged tonsils	27
Adenoids (nasal obstruction)	7
Heart disease	6
Lungs—phthisis	1
Lungs—bronchiectasis	1
Slight lung symptoms, clearing up during attendance, and probably due to adenoids	4
Enlarged glands in chest	4
Chorea (St. Vitus' Dance)	2
Bone diseases—	
Old cervical caries of spine	1
Old necrosis	2
Lateral curvature	1
Eye diseases—corneal ulceration and blepharitis	4

Thirteen children showed marked signs of tuberculous diathesis, one of hydrocephalus, one of congenital syphilis, and four evidence of damage through infantile rickets.

Similarly the following conditions were found in the forty children attending the open-air school at Bradford :—

Phthisis (consumption of lungs)	present in	2
Tuberculous peritonitis	,,	1
Tuberculous scars of neck	,,	2
Bronchitis	,,	1
Adenoids	,,	7
Otorrhœa (ear discharge)	,,	2
Rickets	,,	5
Anæmia	,,	18
Enlarged submaxillary glands	,,	28
Eczema	,,	2
Blepharitis	,,	2
Keratitis	,,	1

It is preferable not to admit children suffering from pulmonary tuberculosis, though there is probably no sound objection if they neither cough nor spit. Special arrangements should, however, be made for these children as suggested on page 177.

8. The Duration of the Stay

The children sent to an open-air school go, it must be always remembered, to secure *permanent* benefit from attendance there, and accordingly it is of no use to send them for a matter of a few weeks only. Three months should be looked upon as the minimum; many require a six months' stay, and for others again it is, as a matter of fact, the only form of school really suitable.

9. The Feeding of the Children

Three meals a day should be provided. The more frequent supplying of food, so usual in the German Open-Air Schools, and followed to some extent where these schools have been opened in England, does not commend

itself to the writer: it is unnecessary other than in quite exceptional cases. The following is the menu provided at the open-air school at Bradford :—

Breakfast.—Porridge with treacle ; milk (half pint) ; bread (brown or white) and margarine.

(Practically all the children if encouraged will eat porridge after the first day or two, even though they have never previously been accustomed to take it ; there is nothing more satisfactory.)

Dinner.—The first and second courses were chosen from among the following :—

First Course.—Scotch barley broth ; tomato soup ; meat and vegetable soup ; haricot bean or lentil soup ; meat and potato hash ; shepherds' pie, gravy and green peas (or carrots and turnips) ; Yorkshire pudding, with gravy and green peas ; cottage pie (meat and potato, with crust) and green peas ; stewed beef, with onions, carrots and turnips ; stewed fish, parsley sauce, mashed potatoes and green peas. Second Course.—Sultana or jam roly-poly pudding ; fruit tarts ; baked currant pudding and sweet sauce ; baked jam roll ; boiled fruit pudding (plum or apple) ; milk pudding in variety with stewed fruit ; boiled rice and sultanas ; cornflour blancmange.

Tea.—Milk (half pint) ; bread (brown or white) ; margarine or jam ; wholemeal cake occasionally.

The most scrupulous attention should be paid to the education of the children at meal times ; no other opportunity for true education can be considered of greater value than this. The children must all have their hands and faces washed, and the hair tidied. The older boys and girls should help in the serving. Politeness and attention to one another, especially of the boys to the girls, should be expected. The use of knife and fork and spoon should be taught, and generally how to take a meal in a civilized manner. Flowers gathered by the children

should be on the tables, and certain children should be held responsible for seeing they are gathered and arranged.

While due consideration is paid to the idiosyncrasies of the children it must be remembered that, in the great majority of cases, if children refuse to eat what is put before them, it is nearly always because they are unaccustomed to the diet. By firmness and small helpings at first, the likes and dislikes of children, as experience has abundantly shown, can be greatly reduced: it is largely, though of course not entirely, so far as good plain food is concerned, a question of training.

10. The Clothing of the Children

This is always a difficult question, but there must be no distinction among the children as shown by clothing, for self-respect is one of the chief lessons to teach them. It is imperative that each child has warm underclothing and an appropriate suit or costume, with a pair of strong boots, unless, what is perhaps preferable, wooden sandals and no socks or stockings are worn. Caps will be needed if the sun is hot, but not otherwise. Each boy should be provided with an overcoat, and each girl with an overall, for use when sitting out of doors in cold weather, and each child should have a light mackintosh for use in wet weather. In cases where assistance in the matter of clothing is necessary, this must be given by the Education Committee, who have full power where the school is sanctioned under the Education (Defective and Epileptic) Act to provide it, or application should be made to some charitable organization.

11. Physical Exercises and Games

These should receive special attention. There should be systematic drill suited to the age and capacity of the

child for a short time each day, and also for a longer period once or twice a week, while, as already mentioned, breathing exercises can be carried out at any time during the day, at the beginning or end of a lesson, for instance.

The open-air school presents an excellent opportunity for teaching the children organized games of all sorts, since for the most part they are strangely ignorant of how to play. Capacity for arranging this part of the school curriculum should be especially required when selecting a teacher. Such physical exercise must not, of course, be overdone, but then individual treatment of the child is pre-supposed at an open-air school. Some of the Morris dances and old English games will find an appropriate setting in the life and surroundings of the open-air school.

12. Bathing Arrangements

Shower baths are a desirable part of the equipment; they are needed not only from a cleansing point of view, but they constitute an excellent form of treatment when rightly given. A shower should be given to each child every day, unless there is some good reason to the contrary. In the hot weather it may be a cold shower only as a matter of routine, a hot shower preceding it for cleansing purposes as often as necessary, say once or twice a week. In the colder weather a hot shower should first be given, whether needed for cleansing purposes or not; a cold shower should always be given at the finish, and the child be well rubbed down, and then quickly dressed. Granted that sufficient showers are provided, the bathing of the children can be quickly carried out. Should a pool be available for diving and swimming, it would of course be a great acquisition for use by suitable children.

13. The Results

(*a*) *Physical.*—The testimony in favour of the Open-Air School from this point of view is, as indeed one might expect, overwhelmingly convincing. In the Report of the Bostall Wood Open-Air School already referred to, Dr. James Kerr gives interesting details as to the benefit derived. As he says, "The results of attendance from the points of view of health and physical improvement were satisfactory, whether judged from the appearance and demeanour of the children, the detailed notes taken of the progress of each child, or the statistical evidence given in the tables." In the Bradford Report already referred to, the results are considered under the following headings :—

I. General appearance and carriage.

II. Effect on nutrition as shown by the weight.

III. Effect on the proportion of hæmoglobin in the blood.

IV. Effect on chest girth measurement.

The following extracts from the Report will illustrate what may be expected in the matter of improvement in the physical condition from the treatment at an Open-Air School :—

"I. *General Appearance and Carriage*

"This was very striking after a week or two, and cannot well be expressed in words. The children brightened up obviously in appearance and expression. The improvement in appearance was greatly assisted by the bathing and by attention to the hair, each girl having her own brush and comb. Improvement, too, was made in the matter of clothing.

"II. *Effect of Nutrition as shown by the Weight*

"The children gained weight in a very satisfactory manner, as reference to the chart will show. The average gain per child was steady each week for the first month, and after that, steady, but, of course, less marked. At the end of the first month the average

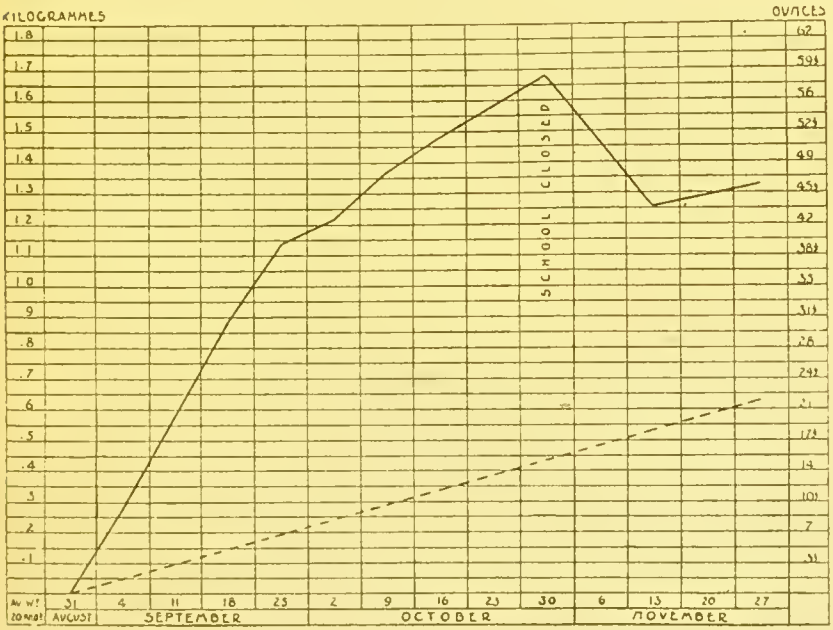


FIG. 13.—Chart showing the average weekly gain or loss in weight of children attending the Open-Air Recovery School at Bradford. The broken line shows the average increase (approximately) which takes place in the case of children, similar to the above, under ordinary conditions.

gain was 1·14 kilos (2 lbs. 8 ozs.), or approximately as much as these children would under ordinary conditions have gained in six months. At the end of the nine weeks the average gain per week was 0·10 kilos (3½ ozs.), that is to say, as much again as under ordinary conditions.

"The highest gain was 3·05 (6 lbs. 11 ozs.).

4	gained over	2·0 kilos	(4 lbs. 6 ozs.)	
12	gained	1·5 „	(3 lbs. 5 ozs.)	to 2·0 kilos (4 lbs. 6 ozs.)
17	„	1·0 „	(2 lbs. 3 ozs.)	„ 1·5 „ (3 lbs. 5 ozs.)
4	„	·5 „	(1 lb. 1½ ozs.)	„ 1·0 „ (2 lbs. 3 ozs.)
2	„	under ·5 „	(1 lb. 1½ ozs.)	

"It must not be expected that every child at an Open-Air School will necessarily gain in weight. Some children may be very suitable subjects for such treatment, who are nevertheless of good nutrition to start with; others may be even unhealthily heavy as may be seen to be the case in rickety children. One of the children who improved greatly out at Thackley was a rickety child who showed practically no increase in weight.

"III. *Effect on the Proportion of Hæmoglobin in the Blood*

"The red colour of the blood is due to the presence in the red blood corpuscles of a definite chemical substance known as hæmoglobin. This body plays a very important part in carrying the oxygen from the air in the lungs to all the tissues of the body, and the proportion in which it is present in the blood is a valuable indication of the degree of anæmia present and of the condition of the child's health.

"The improvement produced in this respect is interesting. It is more marked than I should have expected, but the greatest possible care was taken to insure that the technique of the examinations, made on entering and on leaving the school, was the same in each case. The estimation of the hæmoglobin was made by means of a Von Fleischl's Hæmoglobinometer.

. . . The general results are shown in the following table :—

Hæmoglobin on Admission (100 being taken as "normal").	Boys.	Girls.
Less than 70 per cent.	1	1
Between 70 and 75 per cent.	3	1
„ 75 and 80 per cent.	5	6
„ 80 and 85 per cent.	6	4
„ 85 and 90 per cent.	2	4
Increase in Hæmoglobin.		
Stationary	1	3
Under 5 per cent.	3	0
5 to 10 per cent.	5	5
10 to 15 per cent.	3	5
15 to 20 per cent.	3	2
20 to 25 per cent.	2	1

"In the following is given a summary of the above :—

Average Percentage of Hæmoglobin on admission (normal being represented by 100)	Boys. 78	Girls. 80
Average Percentage of Hæmoglobin on leaving	88	90
Average increase per cent.	10	10

"IV. *Effect on Chest Girth Measurements*

"The chest measurements were taken on admission and on leaving ; in each case the measurement was just below the nipple at the end of full inspiration and of full expiration respectively. The following table gives a summary of the results obtained by comparing the measurements in full inspiration at the beginning and end of the experiment. . . . This increase represents improved power of chest expansion ; part, but only a very small part of the increase, might be due to the chest wall

being better covered owing to the improved condition of the child.

Increase in the chest girth on full inspiration.	Boys.	Girls.
Nil	1	0
Less than ½ inch	0	1
½ to 1 inch	5	8
1 to 1½ inch	4	6
1½ to 2 inches	5	3
2 to 2½ inches	0	0
2½ to 3 inches	0	1 "

(*b*) *Educational.*—Dr. Rose in his Report to the London County Council, writing on this subject says, "All teachers agree in noticing a considerable increase in the attention and mental alertness of the children during the hours of instruction. Their reports on the work during the Open-Air School term show that, in the great majority of cases, the results were satisfactory. Three months after the return of the children to their various schools in the town, reports were sent in from the Head-masters of the Schools in question, showing that in almost all the cases the children were able to continue in a normal manner the instruction with their former classes. In a few cases their progress was even more satisfactory than before their attendance at the Open-Air School. These are very significant results, and raise the question as to whether the subjects of instruction in elementary schools could not be taught in a different manner. In some twelve cases it was less satisfactory. The latter cases were attributed principally to illness consequent on the children's return to insufficient nutrition and unhealthy surroundings at home, and the confined air and lack of movement of the class-rooms.

"No less important than the above results was the

great improvement noticed in the moral tone of the children. Their behaviour showed great improvement, especially with regard to order, cleanliness, self-help, punctuality, and good temper. This was attributed to their isolation from street life, and to the constant intercourse with the teachers outside the hours of formal instruction. The children were taught to regard themselves as members of a large family, and were trained to assist in the daily life of the community, and to be helpful and considerate towards one another."

14. The Cost of the School

No general statement can be made as to the total cost involved in the establishment of an Open-Air School, as so much depends on local circumstances. One is bound to admit that the outlay is in addition to what is already being spent, since no other schools or classes are closed because an Open-Air School is opened. In some places the question of site may be a somewhat serious one, though since it is necessary to have the school well removed from city or town, so long as it can be approached by car, the land required can usually be bought or rented at a comparatively low figure.

From what has already been said, it is clear that building need not be costly ; simplicity should be everywhere the keynote. The cost of maintaining the school compared with that of maintaining an ordinary school will be greater in proportion as the Education Committee have to pay for the food and car-fares of the children. The teachers' salaries, too, are likely to be on a somewhat higher scale than that of teachers in the ordinary school, but against this it must be remembered that the school earns a higher grant per child from the Board of Education.

As we have already remarked, children are sent to an Open-Air School, primarily upon health considerations. A considerably wider experience of such schools will be necessary before a final estimate can be made from an educational standpoint. It will be more especially interesting to note the result in regard to children who attend year after year for some seven or eight months of the year. The results so far obtained are undoubtedly most encouraging, and it seems certain that there will be a gradual introduction of the spirit, and to a considerable extent of the method, of the Open-Air School into the ordinary elementary school system.

CHAPTER XV

THE SCHOOL AND INFECTIOUS DISEASE

General considerations—The "seed" and the "soil"—Measles—Onset—Course—Complications—Method of spreading—Prevention.

TO the school authority, infectious disease is of the greatest moment, disturbing, as it so frequently does, the work of the school, but to the child it is of still more moment, for while an attack of any one of the more common infectious diseases may be frequently of a mild nature only, and leave no serious result behind, still in other instances, not only may an attack prove fatal, but over and over again the children are crippled physically in one way or another.

The incidence of the different infectious diseases in regard to age, and the mortality rate, at different ages, varies greatly, and upon this hang, as we shall see, many practical problems. With some of these we have already dealt in the chapter on Infant School, when discussing the question of the age at which children should first go to school; others will arise as we come to treat of each infectious disease separately.

Infectious diseases have much in common; they are all caused certainly or presumably by a micro-organism; they all have a period, known as the "incubation period," between the time when the germ first gains access to the body and the time when the first symptoms of the

disease show themselves; they have much in common in their signs, symptoms and general course; and they all to a greater or less degree render the patient immune to a second attack. But from the school point of view their resemblances are of less moment than their differences. The school has suffered much in the past through these diseases being too often grouped together, through want of accurate study of them. Too much has also in the past been taken for granted, and there has often been a lack of scientific method in dealing with them. The respective parts played in their dissemination by the school itself and by the scholar have been somewhat scantily considered, and the attitude upon this aspect of the subject, even upon the part of medical men, has not always been as discriminating as it should be. The study of bacteriology has, for instance, helped us much in the case of diphtheria, but there is still needed more accurate clinical observation, more study of the facts of incidence and more careful examination of statistics, and then a more appropriate application of administrative measures, than has been the case in the past. A thorough system of medical inspection will render this possible.

The term "Infectious Disease" is a wide one: as to what diseases are exactly included, we need not concern ourselves; we are only concerned with those having a direct bearing on the school. Of these again we shall only treat in this chapter such as are acute in their course, and shall not include, for instance, tuberculosis, which we have already dealt with elsewhere; neither shall we treat of diseases purely local in character, and giving rise to no general symptoms—*e.g.* ringworm.

A preliminary word is also necessary in regard to the term "Contagious Disease." It should be understood that no distinct division can be drawn between diseases which

spread by "infection" and those which spread by "contagion," "contagion" being only a special form of "infection," *i.e.* infection by contact. If the terms "contagious" and "contagion" are used at all, then they should be used simply as descriptive terms to indicate one method by which an infectious disease is spread. If the term "contagious disease" be used it should be confined to such diseases as spread by direct contact and are local only in their manifestation, *e.g.* ringworm, scabies (itch), etc.

The Seed and the Soil

Any detailed consideration of particular infectious diseases must be preceded by some discussion of two points from a more general standpoint—what is now so frequently alluded to as the "seed" and the "soil." Every form of infective disease is due to a "germ." The germ, it is true, has in many cases not been isolated, but analogy leaves little doubt as to the fact of its presence. A germ is a living organism, which entering the body at some point—*e.g.* at the tonsils, in diphtheria, through the alimentary tract, in typhoid fever — multiplies within the body either locally or generally, or both, and by such multiplication or by the production of toxins, gives rise to the symptoms characteristic of the disease. These germs belong to the vegetable kingdom ; they are known as bacteria, and are members of the great group of fungi. They are extremely minute organisms, varying in size from one-third of a micromillimetre to about three micromillimetres —from, that is to say, about $\frac{1}{7500}$ to about $\frac{1}{800}$ of an inch. In form they are most commonly either spherical (micrococci), or cylindrical and rod-shaped (bacilli). Various forms of blood-poisoning and suppuration are

due to the former group, while bacilli of different forms are responsible for tuberculosis, diphtheria, typhoid fever, etc.

But if the seed is important, no less is the soil. The susceptibility to the different infectious diseases varies greatly in different children, and this, too, in a way of which we are largely ignorant, *i.e.* we cannot say beforehand whether a child will take a given infectious disease or not. To some diseases many children are quite immune, *i.e.* they are in the same position naturally as are those who have had the disease, and are so protected against a further attack. But the character of the soil shows itself not only in respect to its power to prevent the "seed" from developing, but also in the severity or otherwise of the disease to which the seed gives rise. It is not always easy to say how far the character of the attack is determined by the degree of virulence of the germ, and how far to the degree of resistance of the person attacked, but this latter undoubtedly exercises an important influence, though here again we are but little able to estimate such influence beforehand. And one must discriminate, too, between this inborn degree of capacity to resist, and the capacity acquired by the effect on the physical condition and general health of the upbringing and surroundings of the child: the seriousness of measles, for example, is almost entirely connected with the complications which arise in its course, and these are for the most part connected with bad hygienic conditions.

We must now pass to a consideration of each disease separately: many points which are usually discussed in a general way, *e.g.* exclusion of scholars or closure of school, and other methods of prevention, we shall find it best to deal with by considering such questions in relation to each disease in particular. The subject of disinfection,

however, we shall treat as a whole at the end of the chapter.

The following are the infectious diseases which will be discussed: Measles, Scarlet Fever, Diphtheria, Whooping Cough, Mumps and Chicken Pox, and some reference will be made also to Small Pox, Influenza and Typhoid Fever.*

Measles

Measles is a disease to which even yet but comparatively little importance is attached by the general public. It is responsible for about 13,000 deaths annually in England and Wales. Epidemics differ much in their severity, the mortality varying from two to about eight per cent. of those attacked.

It must be noted, however, that in a population among which measles is always more or less rife, the disease is not *in itself* a fatal one. In comparatively rare instances, it is true, it may prove fatal, even where all the surrounding circumstances are favourable, but the heavy death rate is directly due to lack of appropriate care and attention, and to bad hygienic surroundings; these lead to complications, especially inflammation of the lungs, and to these death is frequently attributable. But measles is a more serious disease than the death rate immediately due to it would imply. It is apt to cripple the child in one way or another, and often to shorten life by, among other conditions, the chronic lung disease (sometimes taking the form of tuberculosis of the lung), the middle ear disease, and the external ear disease, for which it may be directly responsible. Its less evil, but

* For a full account of infectious diseases, from the point of view of clinical course, symptoms, treatment, etc., see "Infectious Diseases," Goodall and Washbourne. London: H. K. Lewis, 1909.

the one which perhaps appeals the most to the education administrator, is the havoc it plays with school attendance.

The germ causing the disease has not yet been discovered. The incubation period is commonly about eleven days ; it may be sometimes a day or two less and and not infrequently rather longer, though very seldom exceeding fourteen days. The characteristic onset is well known :—the running eyes and nose, slight hoarseness with increasing feverishness, and then, on the fourth day of the disease, the rash nearly always well marked and unmistakable. Remaining at its height for a day or two, the disease normally abates gradually, and at the end of a fortnight, or it may be considerably sooner, the child is practically well. "Peeling" is represented by a powdery condition of the skin, hardly, however, noticeable. But the course may be less favourable, the disease proper assuming a virulent form almost from the onset. It may give rise to complications, especially bronchitis and broncho-pneumonia ; also, as we have seen, to disease of the middle ear, leading to ear discharge and, associated with the conjunctivitis, a slight degree of which is so common, an inflammatory condition of the eyelids leading to chronic blepharitis so frequently met with in school.

Methods of Spreading

To the question, how is measles spread ? we have, in spite of not knowing the micro-organism in question, a clear answer, viz. from child to child. From our present point of view, viz. the school point of view, this really needs no qualification. A few individual cases suggest that the disease has been spread by, for instance, clothing, but all methods, other than direct

infection from child to child, are to the schoolmen but of academic interest. It is necessary to keep this clearly in mind, since so confused an idea is found among school authorities and others as to the methods by which diseases are spread, and in this connection, as we shall see in the case of each disease of which we treat, methods of practical procedure are in question, methods of disinfection and so on, the place and value of which depend entirely upon a careful recognition of facts.

Coming now to the history of a measles epidemic in school, we are usually first made aware of it by the fact that a number of children, perhaps as many even as one-third or even one-half of an Infants' class, are simultaneously attacked with the disease ; perhaps a few other cases are discovered also in one or another of the other classes. In ten or twelve days' time a large number again succumb, and at another similar interval a further and usually final batch, the number being much smaller than the preceding ones, brings the epidemic to a close. Such is quite a common history of an outbreak of measles in an Infants' School. There is, however, of course much variety, depending clearly upon how many of the children are already protected by a previous attack, how far the initial offender came in contact with sundry members of classes other than his own, and so on, *i.e.* the course is either more or less rapid ; in a school already comparatively well protected the disease may practically die out almost after the first crop. Some valuable work upon the subject has been done by the medical department of the London County Council, and the account of this work and the conclusions arrived at are embodied in the Reports of Dr. James Kerr to the Council. A particularly useful report was furnished by Dr. Thomas working in the Woolwich

district.* Among many other points he showed in an interesting manner how measles always tends to spread when the number of unprotected children in a class reaches to between 30 and 40 per cent., and having commenced to spread, it continues to do so until there are only some 15 to 20 per cent. unprotected children left unaffected. The behaviour of measles, however, will clearly not be the same in all districts, in rural, for example, as in urban, though districts and towns comparable as regards density of population may be expected to show epidemics having similar features. In all towns measles spreads mainly among children of five years of age and downwards, due to the frequent facilities the children have of catching the disease. Where the facilities are less, *e.g.* in the suburbs of a town where there is less crowding and less facility for disease spreading, and where, too, parents are, generally speaking, in somewhat better social position and pay more intelligent care to the bringing up of their children, the disease is not acquired at so young an age, and cases may occur with considerable frequency among children of six years of age.

Prevention

The question of prevention of measles raises some interesting questions. We should expect at the outset that the task would be a difficult one, first on account of the extremely infectious character of the disease, and secondly on account of the initial symptoms resembling those of an ordinary cold in the head, and indeed being often mistaken for such, and to this we must add the fact that it is at this period that the disease

* Report of the Education Committee of the London County Council submitting the Report of the Medical Officer (Education) for the year ended March 31, 1908. (P. S. King and Son.)

is most infectious. Given, then, conditions such as compulsory school attendance affords, putting on one side the mingling of children in their homes and in the streets, given the fact that the initial stages are not only the most infectious but the least easy to diagnose, we shall not be surprised that for all practical purposes we cannot prevent the disease; what we can do, however, is to alter its incidence in regard to age. Even this fails to bring one advantage for which we might have hoped. The susceptibility to the disease seems to lessen comparatively little as the child grows older: as things are, however, to-day a child as it grows older, who has escaped when an infant, gets less opportunity of developing the disease, since the occasions of contact with other cases become fewer. The apparently greater immunity is probably not real, though it is not possible at present to speak dogmatically upon that point.

From another point of view, however, as we have already seen, to raise the age at which a child can catch measles is an end to be aimed at, at least to a certain point. All possible steps should be taken to prevent an attack before the age of five, and if it can be put off until the age, say, of seven, so much the better.

Assuming, then, that an attempt must be made to control the disease within the limits suggested above, what preventive measures can be taken so far as the school is concerned? There are three headings under which this may be done: (1) school or class closure; (2) the detection and exclusion of individual cases; (3) attention to the amount of floor space per child and ventilation.

In the past, school closure has been resorted to in an arbitrary sort of manner, depending upon the degree to which the average attendance has been reduced. Experience of measles epidemics shows, however, how

extremely unsatisfactory such a procedure is from the point of view of checking an epidemic. The mischief has practically all been done after the appearance of the first batch due to the initial case, and it is quite clear, and Dr. Thomas' accurate work finally establishes this, that for closure to be effective it must be adopted on the appearance of the first case. In the great majority of instances this first case escapes observation, but should the first case be detected and the school closed, it is quite clear that, considering how prevalent measles is, another first case would arise almost as soon as the school was opened, and again closure would be necessary. If such practice were rigidly carried out, an Infant School would, in a large town, rarely be open. Class closure is an attractive alternative to school closure, but the results as obtained by Dr. Thomas in his inquiry are extremely unsatisfactory: it is certainly not worth while adopting in the case of children of five years old and upwards; where there seems a likelihood of somewhat postponing the attack among the babies this class should for this reason be closed upon the discovery of the first case. From the point of view, then, of prevention of the disease, school closure within the limits practicable is of no service; class closure in towns is almost equally unsatisfactory, though it may well play a useful part in a rural area.

Passing on, then, to the detection and exclusion of individual children, what can be expected of this as a preventive measure? In so far as it is accurately carried out it must, it is clear, largely influence the course of an epidemic; obviously the longer a child in the initial stages of measles remains in the school the greater will be the chances that such a child will spread the disease. If one were, then, to take an extreme case and suppose that a doctor paid a visit every day to an

Infants' School and examined every child from the point of view of possible commencing measles, undoubtedly much would be done to prevent a sudden outburst of measles; the disease would spread more gradually. Such daily visiting is, however, impracticable, and upon other grounds undesirable, but any advantage gained could be largely secured by an energetic and intelligent teacher trained in hygiene. For reasons we have explained, the advantage of detection and exclusion would be very real in the babies' class.

The relation between overcrowding and bad ventilation and their influence upon the course of measles is such as one would expect. Obviously these conditions allow of much more intimate contact both direct and through the air breathed, of a child or children affected and those unaffected. Dr. Thomas gives a very convincing illustration of this. A number of schools were closed upon the earliest knowledge of a single case of measles having occurred. In six of the schools the percentage of unprotected children attacked was respectively 65, 50, 41, 13, 33, 33, while in the remaining two, which were temporary and also insanitary buildings, the percentage was as high as 81 and 90 respectively. Similarly, noting the percentage of children left in the schools who have not had measles, this was in the case of the first six schools, 9, 15, 18, 21, 18, 25, respectively, and in the case of the two temporary buildings 6 and 4.

Disinfection of the school building, as the term is usually understood, *i.e.* fumigating and the use of special chemical disinfectants, serves no useful purpose in the prevention of measles. In our elementary schools there is no evidence that measles is spread by the school building, except in so far as the building permits of overcrowding and does not allow of plenty of fresh air.

One question remains, viz. how long should children be kept away from school who are suffering from measles, and how far is it necessary to exclude also members of the same family and for what period of time? In regard to children suffering from the disease we are concerned only here with the question as to how soon a child can return to school without being a source of danger to other children. The risk of a child passing on the infection diminishes in uncomplicated cases rapidly from the first few days onward. In the vast majority of cases there is little risk of infection at the end of a fortnight, and from this point of view, at any rate, children may be permitted to return to school at the end of three weeks; that is, of course, on the assumption that there are no complications nor sequelæ of any kind, no mucous discharges, or running from the ear which might spread the infection. From the point of view of the health of the child itself, however, it is not wise that it should return to school until after the lapse of four weeks.* Strictly speaking, no child should be re-admitted without a medical certificate, but when it is considered how comparatively few children with measles are attended by a doctor, there will be required a considerable extension of the present State medical service before this desired end can be attained.

Then as to the exclusion of "contact" children. Theoretically this is a question which need give rise to very little trouble, seeing that the spreading of measles by a child not itself suffering from the disease practically never occurs. Accordingly one might argue that no child who has already had the disease need remain from school. In an Infants' Department, however, it is

* See Memorandum on Closure of and Exclusion from School issued conjointly by the Local Government Board and the Board of Education. (London: Wyman & Sons. 1909.)

advisable to exclude all children from an infected home. There is not infrequently uncertainty as to a previous attack, and there is, too, the possibility of a second attack, though this is much less than is sometimes thought, and there is no doubt that accurate investigation would bring these down to an extremely small percentage. However, for the above two reasons and the, to some extent, practical difficulties in differentiating the children, it is best in an Infants' Department, where there is so much "combustible" material, to quote Dr. James Kerr, to exclude all children coming from the same home. The case in the Upper School is quite different. In all towns children of the Upper School, with the exception perhaps of those in Standard I. in the more outlying districts, may safely be permitted to attend school if they have themselves had measles. Even should a second attack develop it would be of little consequence, since there would be practically no susceptible children among whom the disease might spread. It will be seen from this how many children there are who at the present time are absent unnecessarily from the Upper School during epidemics of measles.

Children who are not allowed to come to school from an infected home should remain at home until three weeks have elapsed since the occurrence of the last case.

CHAPTER XVI

THE SCHOOL AND INFECTIOUS DISEASE (CONTINUED)

Scarlet Fever—Onset and course—Methods of spreading—Effect of School attendance—Prevention.

Scarlet Fever

SCARLET fever presents problems very different from those of measles, and is a disease of peculiar interest to the school doctor. It is most common at about the ages of five and six, though there is a general tendency for the disease to be contracted later in the child's life than formerly. It is, however, during infancy that it is most fatal. The liability to take scarlet fever seems definitely to decrease as the child grows older and there is, too, marked idiosyncrasy in regard to susceptibility to the disease. This point, combined with the great variation in the virulence of the germ causing the disease, leads to a correspondingly wide variation in its incidence, in the course of outbreaks and in their severity.

A good deal of controversy has centred around the micro-organism causing the disease, and the point cannot be considered settled even yet. The general concensus of opinion is, however, that it is due to a specific micrococcus, but exact proof is not at present available. The incubation period of scarlet fever is fortunately a very short one; the disease in the large number of cases

develops from the third to the fifth day after exposure ; it may even do so in twenty-four hours. The incubation period probably never exceeds a week.

The onset of the disease is sudden and the child is obviously ill from the first ; one of the first symptoms usually is vomiting, and such an onset occurs from time to time in school. A typical case of the disease with all the symptoms developed in twenty-four hours is quite frequently seen ; the high temperature and rapid pulse, the flushed face, with at the end of twenty-four hours the characteristic rash ; the furred and subsequently the "strawberry" tongue, and the sore throat, are all present. For a day or two the disease remains at its height, and then in an uncomplicated case all the symptoms gradually abate, and soon nothing is left to indicate the disease but the "peeling," which, commencing before the end of the first week, remains for four, five or six weeks, and sometimes even drags on for two or even three months. In the clinical forms of the disease there is almost endless variety, but these must not detain us, except in so far as they bear on the school. Thus the disease may be malignant from the very onset, and even death occur in the first few days. Complications often arise which may prolong the illness, but eventually leave no trace behind them. Others leave their mark for many months and perhaps throughout life. Inflammation of the kidney or nephritis (Bright's Disease), which not infrequently develops at about the third week of the illness, fortunately usually passes off, but the children found in school suffering from this complaint nearly always date the onset from an attack of scarlet fever. A condition closely resembling rheumatic fever may develop during convalescence, and, as a consequence, scarlet fever may prove the starting point of heart disease. Inflammation of the bony wall of the middle ear is

common, and to this condition is dated a considerable proportion of the cases of "running ear" found in school life. Inflammation of the glands of the neck, with perhaps abscess formation, may occur; the throat may not completely regain its normal condition for a long period; catarrhal condition of the nose may persist, and such symptoms as these we shall find of considerable moment when speaking of prevention.

But in addition to the more typical instances of scarlet fever, there are many typical forms, and these as a matter of fact are really of more interest from the school point of view than the former. The disease may be extremely mild, and even altogether escape attention. The child may have had what was considered a "feverish attack" only or may have seemed simply out of sorts for a day or two. Or indeed there may have been nothing whatever complained of except a sore throat.

Methods of Spreading

Coming now to the question of most importance from our point of view, how does the disease spread? What part does the school play? We shall find no such easy answer to this question as in the case of measles; we shall find we have even to distrust what appears at times apparent on the surface. We should naturally expect that the usual story would be that a case would develop in school, and then in a few days a further batch of cases would arise, and so on; but such is not the case, or only rarely. Thus, in many large towns there are one or two children away with scarlet fever or on account of scarlet fever in the home from perhaps a third or more of the schools, and such a condition of affairs may remain true throughout the year. Suddenly there will arise in a school perhaps four or five cases with absolutely no

apparent connection the one with the other, and exactly the same thing may happen sometimes in a district among the non-school-going part of the population, and indeed the sudden development of a few cases in a school may be found associated with a similar development apart from the school. In some of these developments it is quite certain that there has been no immediate preceding case common to them at all; there seems no escaping the conclusion that the germ is latent, probably in the throat, and that conditions arise about which at present we know nothing, possibly climatic and telluric, which favour its development. The condition of affairs is further complicated, since cases of sore throat are found synchronous with the developing epidemic, and there is ample proof that some of these are definitely scarlatinal and capable of producing the typical disease in others.

A very little acquaintance, then, with the epidemiology scarlet fever will show us that it is a complex problem, and will make us very careful how we jump to conclusions in regard to the responsibility of the school for epidemics. We may consider this responsibility from two points of view; we may endeavour in the first place to ascertain to what degree the disease spreads during term time as compared with holiday time, and during the days of the week the school is open as compared with those when it is shut, *i.e.* with Saturday and Sunday. And secondly we may consider what opportunities the disease has of actually spreading in school: this will help us, too, when coming to the question of prevention. That the school is definitely responsible for spreading scarlet fever seems at first sight, at any rate, clearly shown from the table reproduced below, which is a summary of the tables published by the medical officer of health for the County of London, Sir Shirley Murphy, in his Annual Reports for the past five years (1903–7).

Period	Notified Cases—Age Periods			Increase (+) and Decrease (−) Per Cent.		
	0—3	3—13	13 and upwards	0—3	3—13	13 and upwards
Four weeks preceding weeks of holiday influence	889	5612	1031	—	—	—
Four weeks of holiday influence	923	4786	972	+3·8	−14·7	−5·7
Four weeks following weeks of holiday influence	953	6939	1299	+3·2	+44·9	+33·6

It will be seen that in the case of children over three years of age there is a marked fall in the number of notifications during the holiday period and a marked rise during the four weeks subsequent to the holiday. These figures, however, need correction in several directions, and probably express a greater difference than actually obtains. Thus, for example, Dr. Kerr has shown that there is a great exodus of children from London during the holiday season, decreasing the actual number of school children in London by about 20 per cent. during the holiday ; this alone is an important factor.* The influence of school has also been demonstrated by comparing the number of notifications received upon different days of the week.† Thus the Medical Officer of Health for Sheffield, Dr. Scurfield, shows in the following table that the percentage of cases in which the rash appeared on Wednesday and Thursday is distinctly less than noted upon other days of the week, and the inference

* Report of the Medical Officer (Education) London County Council, 1905–6.

† Dr. Arthur Whitelegge, when Medical Officer of Health for the City of Nottingham, was the first to draw attention to this point in a paper entitled, "Age, Sex, and Season in Relation to Scarlet Fever." Published in the Transactions of the Epidemiological Society of London for 1887–8.

is that fewer children are infected upon Saturday and Sunday owing to the schools being closed upon these two days :—

Day of week.	Total cases, January to June, 1904.		Total cases, July to December, 1904.		Total cases, January to June, 1905.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Sunday . .	79	13·9	148	13·8	115	16·6
Monday . .	82	14·4	179	16·6	111	16·0
Tuesday . .	86	15·1	150	13·9	115	16·6
Wednesday .	74	13·0	140	13·0	74	10·7
Thursday . .	76	13·4	137	12·7	87	12·5
Friday . .	90	15·8	167	15·5	91	13·1
Saturday . .	82	14·4	156	14·5	101	14·5

On the other hand, figures similarly analyzed in the case of the city of Glasgow show no such variation as is shown in the following table taken from the Report of the Physician Superintendent to the City of Glasgow Fever and Small-pox Hospitals, Dr. John Brownlee, for the year ending May, 1904 :—

	1901-2.	1902-3.	1903-4.	Total.	Difference from mean.
Sunday . . .	38	44	42	124	− 5·6
Monday . . .	54	54	35	143	+ 13·4
Tuesday . . .	42	37	38	117	− 12·6
Wednesday . . .	40	57	37	134	+ 4·4
Thursday . . .	48	47	25	120	− 9·6
Friday . . .	54	50	39	143	+ 13·4
Saturday . . .	38	46	42	126	− 3·6
Total . .	314	335	258	907	

In the same Report Dr. Brownlee points out that prior to 1894 there was practically no supervision over scarlet fever in Glasgow, while from that date onward

stringent rules as regards attendance at school were in force, and yet "a measure, which practically revolutionized the whole administration of scarlet fever in its relations to schools produced not a particle of effect on the age-incidence of the disease." The same writer, in his Report for 1902, points out also that the age-incidence at different seasons of the year practically does not vary. Were scarlet fever spread materially by school attendance there should be a marked proportional increase after the summer holiday, at the age of six, the time and age at which a very large proportion of the Glasgow children attend school for the first time.

We have already seen how extremely difficult it is to see how, in many instances, the school has been responsible directly for the spread of scarlet fever, but there are concrete cases without doubt where one can show that the school has so acted as a centre of infection. This possibility we must consider from several points of view. In the first place a child may sicken with the disease in school, and indeed the initial vomiting may occur in school. Such a child may obviously be a centre of infection for its class-mates. As a matter of fact, it is only one or two children at the most whom one finds affected in this way ; immediate contact is requisite and the time during which such a child remains in school is of course very short, since the child is obviously ill, and is at once sent home. It is clear, then, that the method by which measles is most commonly spread is that least likely to occur in the case of scarlet fever. Secondly, children may return to school too soon after the disease ; they may perhaps have been kept at home during the earlier stage and have returned to school before thoroughly convalescent. Examples of such children, peeling perhaps almost from head to foot, are occasionally found

sitting in school, and yet, as a matter of fact, no further cases develop in consequence. This, as well as other evidence, tends to support the contention so rapidly gaining ground that the desquamation of the skin does not carry infection with it. But children who are convalescing from scarlet fever appear none the less able to disseminate the disease even though they should not be peeling at all; such are children with discharges of any sort, ear discharge, glands perhaps still suppurating, children whose throats are not yet perfectly well. All such appear able to act as foci of infection. Children who have had the disease very mildly and have even perhaps never been absent from school on account of it, one would naturally expect to act as centres of infection. Finally it is possible that during times of epidemic the disease germs may be carried by healthy children or at any rate by children ailing but little beyond a slightly relaxed throat. Apart, however, from the child itself we have the influence of its clothing, of its books and slate, etc., and the influence also of the school premises to consider. That scarlet fever can be spread by a third person acting as an intermediary there can be little doubt, but such a method, under existing arrangements for dealing with known cases, is practically never found in operation in school. As to the school premises, their influence at the earlier stages of an epidemic is probably nil, and their influence at any time is doubtful, except in so far, of course, as there is overcrowding or bad ventilation.

Prevention

From all that has been said it is evident that we have much to learn in regard to the spread of scarlet fever before our knowledge can be considered accurate. The most striking fact is that the disease tends not to spread,

and certain it is that in so far as the school plays a part in its dissemination that influence would seem to be at almost every point capable of control. What steps must be taken to effect this we must now consider.

Should the disease actually commence during school, obviously the first thing to do is to send the child home at once, the class-room should be cleared, and all windows thrown wide open. Should there have been vomiting the vomited matter must, of course, be at once removed, the floor washed with soap and water, and then some strong disinfectant allowed to remain on the spot: this, of course, assumes that the vomit is infective, which it is necessary to assume until the contrary be proved. A very careful watch over the class for the next week will be necessary. Next, in view of the fact that children not thoroughly convalescent may act as centres of infection, we must keep the strictest eye on these. No child should ever be allowed to return to school after scarlet fever without a medical certificate based upon the examination of the child, definitely stating that the child is free from discharge of any kind, and that it has been at least a week out of the fever hospital. In times of epidemic or of threatened epidemic, daily visits if necessary must be paid to the school; all children complaining of sore throat, or coming from homes where there are cases of sore throat must be carefully examined and questioned, and if necessary excluded: the possibility of very mild cases attending school must be kept in view. So far as the school premises are concerned the first requisite is ample floor space and efficient ventilation.

Provided, then, that the control of scarlet fever, so far as the school is concerned, can be carried out as above described, there is practically no possibility of the disease spreading in the school. Nevertheless there are epidemics at times which are very severe, though seldom so severe

as the decline in school attendance would seem to indicate. Many of the absentees are due to the fact that other members of the family are affected, and children are often, in outlying districts more especially, kept at home through fear of infection. It is possible in such cases for the attendance to fall so low as to necessitate school closure, though from the point of view of control of the disease this is a procedure which ought rarely to be necessary. At times the disease seems to take a curious course in a school, odd cases keep cropping up at intervals of a week or of two weeks perhaps, and it may be impossible to detect the cause. Such cases may with advantage be attacked from all sides, *e.g.* there should be careful individual inspection as mentioned above, special attention should be paid to the thorough cleansing with soap and water of every part of the room and of everything capable of being washed. All hangings should be removed and disinfected. Chemical disinfection, as distinct from the free use of soap and water, may be used in the manner detailed later, provided it is the last and not the first preventive measure resorted to.

In reference to the length of time children must be absent on account of scarlet fever, there must in the first place always be a minimum absence of six weeks. Apart from this, however, a child who has been in the fever hospital must have returned home for at least a week prior to returning to school, and, of course, the child must be certified as free from discharge of any kind which might possibly act as a sort of infection, as already detailed. Children from a home where there is scarlet fever must not return to school until fourteen days have elapsed since the last opportunity of infection.

CHAPTER XVII

THE SCHOOL AND INFECTIOUS DISEASE (CONCLUDED)

Diphtheria—Onset and course—Methods of spreading—Prevention—Whooping cough—Mumps—Chicken-pox—Other infectious diseases—Disinfection.

DIPHTHERIA is perhaps of all the infectious diseases the most dreaded, and in the case of very young children there is every reason why it should be. It is, moreover, a disease which shows no signs of decreasing; indeed, all large towns show that during the past twenty years it has greatly increased. It has been looked upon as a disease closely connected with imperfect sanitation in regard to such matters as drains, cesspools, privies, etc., and yet it is clear that the great strides in general sanitation of the past half-century have in no wise lessened its development. This assumption that diphtheria was caused by and spread through defective sanitation has had and still exercises a mischievous effect. The discovery of Löffler's bacillus and the closer clinical study which has been given to the disease has revealed the fact that it is essentially a personal disease, spreading by direct contagion from child to child, and has shown that the influence of bad sanitation acts indirectly only, when it acts at all, *i.e.* acts only by adversely influencing the general health, and especially by producing a susceptible condition of

the throat, causing this to become a more favourable medium in which the bacillus may flourish. The majority of cases of diphtheria, and diphtheria epidemics in general, have little or nothing to do with bad sanitation in the ordinary sense of the term.

Diphtheria is one of the infectious diseases for which a definite micro-organism has been isolated known as the Klebs-Löffler bacillus. Any pathological condition of the throat, for we are not concerned here with diphtheria other than of the throat, associated with this bacillus, must be looked upon for practical purposes as diphtheria; any condition where this bacillus is not present is not diphtheria. The establishment of this fact has, of course, a practical bearing on the prevention of the disease.

The incubation period is very short, being from twenty-four hours to about five days, usually about two or three days. Typically the onset is sudden, though not so sudden as that of scarlet fever. The critical symptoms are those of an ordinary febrile attack. Sore throat is usually the first thing complained of, and the glands of the neck are almost always enlarged. In a case of moderate severity the constitutional symptoms are not great. The temperature seldom rises above 103° and commonly remains at about 101° or 102°; the pulse similarly is not greatly quickened. In more severe cases danger arises through the local infection spreading to the larynx, and threatening death from suffocation or through great increase in the severity of the constitutional disturbance produced by the local infection, when life may be in danger from the virulence of the poison produced.

Serious complications are apt to arise, the chief of them dependent upon the action of the toxin upon the peripheral nerves, causing paralysis showing itself

typically as paralysis of the soft palate, with as a result regurgitation of the food through the nose; as paralysis of the ocular muscles, producing squint; of the extremities with consequent inability to walk; as paralysis of the diaphragm, causing great danger to life through the supervention of disease of the lungs; and as paralysis of the nerve mechanism of the heart, leading at times to sudden heart failure and immediate death, and at others to very serious symptoms placing the patient's life in continual jeopardy. All these complications, moreover, may come on after an apparently very slight attack of the disease. At the same time, however, that we recognize the formidable character of this disease, we must not forget that it may be represented merely by a slight sore throat which, when unrecognized, may prove as great a source of danger as the more virulent type of the disease.

Methods of Spreading

How, now, is the disease spread in school? From what has been said already we shall know that the answer is practically summed up by saying, "from child to child by direct infection." This, however, will need examining a little more closely. Infection may be spread (1) by a child suddenly developing diphtheria and being in school at the time of the onset—this, of course, is not particularly common, the chances being that the child will be somewhat out of sorts and will in consequence have remained at home; (2) by a child remaining in school with a sore throat, of which no especial notice has been taken, but which is nevertheless a diphtheritic throat; (3) by a child acting as a "carrier" of diphtheria bacilli but not itself showing nor having recently shown any evidence whatever of the disease.

It is by these last two methods that diphtheria is mainly disseminated; children belonging to one or other of these categories or to both will always be found wherever diphtheria shows itself in epidemic form. An epidemic will be stopped just so soon as these two types of children are identified and excluded. What part, then, is played by more external conditions, by clothing, school apparatus, the school building, etc.? Comparatively speaking, very little indeed. Certainly slates and slate pencils are quite a possible source in so far that children suck their pencils and spit on their slates, and then use both pencils and slates indiscriminately. The influence of the school building is just the same as we have had occasion to note under the diseases already discussed; diphtheria, when once the disease has taken an epidemic form, will be spread more easily when there is overcrowding and bad ventilation, simply because these conditions favour the spread of the disease from child to child.

The course of the disease in a school is usually a gradual one. A sudden outbreak in a class may occur, but usually cases are noticed to crop up at intervals of several days perhaps, and then the epidemic may somewhat more quickly develop to serious proportions. The condition of affairs, however, is seldom so serious as one might suppose from the attendance register, since, as in the case of scarlet fever, many children are away on account of illness in the home, and others are kept at home through fear of infection

Prevention

The lines upon which prevention must be based will be clear from what has been said. The old idea, not by any means altogether a thing of the past even yet, of at

once taking up the drains, "disinfecting" the school, or, in a kind of panic, closing it, must no longer prevail; prevention must clearly be based upon the fact that the disease spreads, as we have seen, by direct infection from child to child. Immediately upon the notification of a case of diphtheria in a child attending school the school must be visited and all necessary inquiries made as to the circumstances, and endeavours should be made to discover, if possible, the origin of the case, whether in the school, the home, or elsewhere. Often, fortunately, no further cases will develop; should they do so, definite steps must be taken to ascertain the cause, *e.g.* all children complaining of sore throat, or who have recently done so, must be examined and questioned, and cases presenting any suspicion put upon one side; similar steps must be taken with any children coming from homes where there are alleged to be cases of sore throat. All these, or as many as it may seem advisable, should have a "swab" taken of the throat to enable a bacteriological examination to be made, and the children should be sent home until the result of the examination is ascertained. Steps of this kind will frequently be efficacious. Should further cases develop it may be necessary to "swab" the throats of all the children of a class.

Then the strictest watch must be kept upon all children who return to school after having had diphtheria or who come from homes where the disease has occurred. No such child should on any account be allowed to return to school until the throat has been declared bacteriologically free. In regard, indeed, to sore throats generally among children, no child with a sore throat should ever be allowed to remain in school in a district where there are any, even isolated, cases of diphtheria; and further, no child who has had any kind of sore throat should be allowed to return without a bacteriological

examination having been made. This may seem an exacting and perhaps unnecessary measure to some, but with the facts in regard to diphtheria being as they are, no measures short of complete ones seem permissible.

So far as the school building is concerned we must, from what has been said, recognize the paramount importance of plenty of floor space and of fresh air ; "disinfection," as usually understood, plays a very subsidiary part in prevention, and, as in the case of scarlet fever, it must be the last and not the first thing thought of. School closure should be seldom necessary in the case of diphtheria ; with an efficient medical staff, who are given a free hand, the disease should be controlled. A scare may develop in an outlying district, and this may so reduce the attendance as to necessitate the closure of the school, but in such a case the closure will be on grounds of expediency, not because it is necessary on account of the disease.

In regard to re-admission to school, children who have had the disease should not return until four weeks after their throats have been found, on bacteriological examination, to be free from diphtheria bacilli ; they might, it is true, return sooner from the point of view of not being carriers of infection, but a long convalescence is necessary in the case of so serious a disease. Children who have been in contact must not return for a fortnight or even longer, unless their throats have yielded a negative result on bacteriological examination.

Whooping Cough

Whooping cough is an extremely infectious disease among young children, and where unhygienic conditions prevail, it is, too, a dangerous disease. It is not in

itself a dangerous disease however, but, like measles, it has as a frequent complication bronchitis and broncho-pneumonia, and it is this condition which carries off so many little children. So far as the school is concerned it gives rise to trouble in the Infant School only, and principally in the Babies' Class or among the five-year-old children. No specific micro-organism has been isolated. The disease has an incubation period of approximately fourteen days. The onset is usually fairly sudden, but not always characteristic, as the "whoop" does not develop at first in many cases; indeed, in the more severe cases, especially in those where from the first lung symptoms are prominent, no whooping may occur until the acute stage has passed off. On the other hand, children may be a little out of sorts, but not sufficiently so to be kept from school, and the first indication of the disease may be that the child is noted to whoop in school. The course of the disease is extremely varied, and may extend over a period of many months. In a typical uncomplicated case the initial fever and malaise and associated pulmonary catarrh pass off during the first week, but the fits of convulsive coughing persist, and continue to do so usually for some five or six weeks, gradually subsiding. The disease does not as a rule leave ill effects after it, apart from pulmonary complications; these, too, as a rule, completely pass off, but the disease may be the starting-point of chronic bronchitis, and even of pulmonary tuberculosis.

In school whooping cough is spread directly from child to child; it may be inferred that the vomited matter, should the child vomit in school, is also infectious; there is no evidence that the disease is spread by a third person, and dissemination by the clothing may be disregarded. The school premises exercise just the same influence as has been described under the first three

infectious diseases dealt with. Overcrowding and bad ventilation favour the spread of the disease from one child to another; apart from this the school premises exert no appreciable influence. Though a disease so extremely infectious the results upon the attendance are not so marked as in the case of measles, since a larger proportion of children appear to have had the disease before the age of five. The prevention of whooping cough, so far as the school is concerned, is about as unsatisfactory as is the prevention of measles; immediate detection by teachers trained in school hygiene of cases so soon as developed, and exclusion of the same, together with airy classrooms with plenty of floor space, sum up the means of prevention. It is not worth while resorting to school closure as a means of preventing the disease spreading, though this measure may be adopted on administrative grounds.

Children with whooping cough should not return to school at the earliest for a month, and never until a clear fortnight since the last "whoop." No child should attend an Infants' School from an infected home, but there is no need for children to stop away from the Upper Department, provided they have already had the disease. A child who has been in contact with a case of whooping cough should not return to an Infants' School until three weeks have elapsed since the date of contact. If the children remain in the same house as the patient they should not return to the Infants' School until after the lapse of six weeks from the date of onset of the last case.

Mumps

Mumps is almost always quite a trivial disease: it may, in the Infants' Department, and occasionally in

Standard I. of the Upper School, lead to a considerable diminution in the average attendance, but as a matter of fact some children have the disease so very slightly that they are kept at home for a day or two, no doctor is called in, and the children then return to school again. No micro-organism has yet been isolated. The incubation period is a long one, three weeks. The onset is usually marked by the fact that the child ails, and then immediately almost there is the characteristic pain and swelling, first usually of one side of the face and adjacent part of the neck, and then of the other. This, after a few days, gradually subsides and leaves no ill effects behind it. The disease is spread in school direct from child to child, and the results in regard to the influence of the school building when discussing measles and whooping cough apply here also.

Prevention follows the lines simply of detection and exclusion. Children who have had mumps should not return to school under three weeks. Other children in the house where a case has developed may attend school.

Chicken-Pox

Chicken-pox is another trivial disease which may cause trouble through absence of scholars in the Infant School. The only serious side to the disease is the possibility there is of making a mistaken diagnosis as between chicken-pox and small-pox. Children with chicken-pox start the disease with slight malaise only, and on the first day the characteristic rash makes its appearance and continues to come out in crops for several days. The papules become pustules and then

scab over, and in about a fortnight's time the scabs are shed and the disease is at an end. Occasionally, where the surrounding conditions are very unhygienic, individual spots become septic and take on an angry character, and healing is delayed. The disease is spread in school by direct contact from child to child. Prevention is again simply by means of detection and exclusion of individual cases; school closure will never be needed except on administrative grounds. Children who have chicken-pox should not return to school until after the lapse of three weeks, or until all scabs have disappeared. "Contact" need not stay away from the Upper School, but should not return to the Infants' School until the expiry of fourteen days after the occurrence of the last case.

Other Infectious Diseases

The other three infectious diseases mentioned in Chapter XIV. need not detain us. *Small-pox*, at present at any rate, is almost, so far as the school is concerned, a disease of the past. Whatever may be the pros and cons of vaccination, there is no disputing the fact that a school composed of children all well vaccinated need be in no fear of trouble from small-pox.

Influenza is hardly looked upon seriously so far as schools are concerned, and no attempt is made to exclude children from homes where the disease is present. Generally speaking, the disease is not a very serious one among children, and in a household the disease nearly always works downwards, the older members of the household being affected first. Probably for this reason children actually suffering from influenza seldom sicken in school, but influenza being in the home the

child immediately on sickening is kept from school. The infectious period lasts in an uncomplicated case but a very short time after the feverish stage. The disease is spread by direct contact only, and of all diseases can be prevented from spreading in an exceptional degree by flooding the room with fresh air. The germ needs the company of many of its fellows to spread the disease, and plenty of air space and a constant change of the air prevents this condition being fulfilled.

Typhoid or *enteric fever* is only very rarely of interest from the school point of view. An epidemic in school is hardly possible except in the case perhaps of a country school deriving its water supply from an infected source.

A general survey of all the infectious diseases with which the school is concerned shows us at once of what paramount importance is attention to the individual child. The prevention of infectious disease in our schools is based upon the recognition of this fact; the school building upon which in the past so much attention was concentrated is of quite minor importance, except in so far as it permits of overcrowding or bad ventilation. As we have indicated, too, a necessary corollary of the importance attached to the individual child is the need for the teacher to be well trained in hygiene as it affects the school. A medical man cannot be always upon the doorstep: it would not be advisable if he could, and, moreover, a great part of that which needs doing *in the first place*, as regards the spread of infectious disease, can be done by the teacher; but this implies, of course, the necessary training. The qualifications for being capable of doing what is required are not great. The facts which have to be known are the least part of what is required; an appreciation of the all-importance of hygienic surroundings in school, a love of personal

hygiene and common sense in matters of health, a well-developed sanitary conscience, as it has been well called, are essential; these will, however, only be possessed in so far as the teacher is trained in such ideas from the elementary school, through the secondary school and training college, until all such hygienic questions become, not isolated facts to be thought about, but an inherent part of the teacher's nature. Let the teacher but enter into the spirit of preventive medicine, and then the actual knowledge of diseases he or she will require to make them efficient in the prevention of disease in the school will be comparatively trifling and easily acquired.

Disinfection

The term "disinfection" is frequently used in a very loose sense, and much superstition has grown up in connection with the practice. Disinfection, as practised in the past, and even to-day, may be productive of real harm. When objectionable smells are noticed disinfectants are used, and the stronger-smelling the disinfectant the more is it preferred for the purposes, *i.e.* the disinfectant is used as a deodorant, though there is also a curious superstitious idea that the evil is at the same time being met. Unpleasant smells should be traced to their cause and removed, when deodorants will be no longer required. In all such places as closets and urinals proper construction and complete ventilation will remove the need for deodorants. Disinfectants have no place, and money is but wasted upon them, unless they are scientifically used with the definite end in view of killing disease germs. Experiments have clearly shown that many methods in the past, *e.g.* the burning of sulphur candles under the conditions which ordinarily obtain, are quite valueless, as is also such a process as "sprinkling"

a room or a school with "carbolic." We must, in fact, know the power of the agents we are using and the conditions under which they are likely to be useful.

In discussing all questions of disinfection of schools it cannot be too often reiterated that simplicity and straightforwardness in design and construction, the taking of measures to prevent the accumulation of dust and dirt, the conscientious use of soap and water and damp dusting, the taking of full advantage of the beneficent power of sunshine and fresh air, are all measures of incomparably greater importance than the use of any so-called chemical germicides. Attention to hygiene and cleanliness of the school building in its fullest sense is all that, as a matter of daily routine, is required. Any routine chemical "disinfection" is unnecessary; it is not only a waste of money, but, what is of so much more importance, the employment of chemical germicides tends inevitably to lessen the effective belief in the more natural cleansing methods and measures, and leads to a sense of false security. The necessity for the use of chemical disinfectants in the schools must be considered at present "not proven;" very fallacious ideas of their advantages are current on account of the question of their advantages being so bound up with trade considerations. Where any of these alleged germicides are used they must be used with a full appreciation of the conditions alone under which they can effectively act, conditions, for example, of the amount of dilution and conditions allowing of prolonged contact with the material to be disinfected. A germicide is usually judged by its power at a certain dilution of acting as such upon germs cultivated for the purpose when compared with the power exerted by a solution of carbolic acid of the same strength. Thus a germicide may under these conditions be two, five, ten,

or fifteen times as effective as a similar solution of carbolic acid, and the germicide is then said to have a carbolic acid *coefficient* of two, five, ten, and fifteen, as the case may be. The selection of a germicide should then turn largely upon this, and the higher the coefficient, other things being equal, the better is the germicide; there is, however, one other great qualification, viz. that the germicide in question be stable in the presence of organic matter. Some disinfectants, *e.g.* the well-known permanganate of potash, are almost at once decomposed in the presence of organic matter and their germicidal power lost. Where it is thought necessary to use these chemical germicides on surfaces, *e.g.* floors, walls, desks, seats, etc., they should be so used, *e.g.* in the form of spray or otherwise, that the surface is left wet and allowed to dry naturally. They should never be used except after the most scrupulous attention has been paid to ordinary cleansing and flushing with fresh air. The disinfection of all hangings, etc., must be in specially constructed disinfectors, where the process is carried out by steam or by exposing to the fumes, for instance, of formalin vapour or of sulphur dioxide. Disinfection, so far as the school is concerned, of the character described above will be necessary only, if at all, upon occasions when there has been an epidemic of diphtheria or of scarlet fever, but it is not possible to emphasize too clearly that the part played by school premises in the spread of disease is practically nil where there is no overcrowding, where there is efficient ventilation, and where natural hygienic methods are conscientiously carried out.

CHAPTER XVIII

THE SCHOOL BUILDING

The planning of the school—Central hall type—Pavilion type—The Assembly Hall.

IN the preceding chapters we have been discussing the child, in its various aspects, and we must pass now, in this and in the succeeding chapter, to a consideration of the school environment. In view of the fact that so important a part of a child's life is spent on the school premises, in view, too, of the complexity of school arrangements, and of the many interests which have to be considered, we shall be prepared to find that this part of our subject is a many-sided one: that matters of principle and the relative importance of principles will continually meet us, and then, having decided upon these, the details as to the carrying of them out will afford scope for almost endless difference of opinion. We shall be concerned, so far as space will permit, with the planning of the school and the pros and cons of different arrangements; with its ventilation, lighting and heating; with the furniture of the classroom; with the accessories to the school—the cloakrooms, lavatories and conveniences, the playground, bathing-room, and so on. For the adequate consideration of some of these headings a whole chapter would be insufficient, but nevertheless we shall endeavour to point out what seem to

be the underlying principles which should guide us in each case, and then discuss details in so far as they are intimately bound up with the carrying of such principles into effect. We may thus hope at the end to have arrived at a sufficiently correct picture of what constitutes a suitable school environment in harmony with the hygienic teaching of to-day and with the ideals of an all-round education of the child.

In considering the planning of the school building we must take for granted that a suitable site has been selected, a site as far as possible removed from the noise of a main thoroughfare, with ample playground accommodation and, if at all possible—as may be practicable in an outlying district or in the country—a field adjoining it, a site not overshadowed by adjoining property, and one the drainage of which is good. Whatever the type of building put up there are certain prime essentials which must be observed and which admit of no compromise. Having secured these, convenience and ease of administration must be studied and arranged for at every turn.

A small school, one with, perhaps, but a couple of classrooms, or indeed a single classroom used for all purposes, is a very different affair from a large department for perhaps three or four hundred children, and yet in the main the principles underlying each are essentially the same. In the latter case complications arise through the necessity of arranging for an Assembly Room, and indeed around this and its place and functions are centred a good many of the practical difficulties and differences of opinion in regard to school planning, as we shall presently see. Complications, too, arise in that special departments are required—rooms set aside for manual training in its various branches or for the teaching of other special subjects. Since, however,

the classroom is the unit in the school of whatever size, then, provided that the essentials are secured for such classroom, there should be no great difficulty in linking up the component parts into a whole.

Essential Requirements

The essential requirements are very simple, so simple, indeed, that perhaps that is the very reason why they are sometimes overlooked; at any rate magnificent schools may frequently be seen where attention has not been paid to them, and yet no arrangements however elaborate and no refinements however perfect can ever atone for want of attention to the primary essentials.

Each classroom, then, must be so constructed as to permit of (1) an abundant supply of fresh air, (2) a maximum amount of daylight, (3) for some hours during the day, direct sunlight.

The Planning of the School

In discussing the planning of a school to meet these requirements we shall find it most convenient and in order to avoid repetition to imagine a school large enough to need the provision of several classrooms and of an Assembly Hall, *i.e.* for a school of some two or three hundred scholars. Moreover, we shall assume for the present that the school is to be "naturally" ventilated.

We may recognize two main types, each with many modifications: (1) that in which the classrooms open direct into the Assembly Hall; (2) that in which the classrooms are independent of the Assembly Hall. The first, known as the "central hall" type, is found in two main modifications. In the one the Hall is literally

"central," in the other it is built round on three sides only. This is the commonest type of modern school throughout the country. In the second type, in which the Assembly Hall is independent of the classrooms, these latter open into a corridor or verandah, and may be designated as the "pavilion" type of school. Examples of such a type are given in figures 14, 15 and 16. We may now examine these two main types of school, the "central hall" and the "pavilion" type, rather more closely.

Central-Hall Type

The central-hall type impresses one at once with its compactness, and with the sense of ready supervision it seems to afford of the whole school; it commends itself at once from the point of view of convenience and of ease in administration. Tested by the three main hygienic essentials above laid down, it is hardly, however, so satisfactory. In regard to ventilation it will be observed that any cross ventilation—and upon efficient cross ventilation any "natural" ventilation of schools worth the name essentially depends—must, for the majority of the classrooms, be into the Assembly Room, which cannot be considered entirely satisfactory, especially where the room is built round upon all sides. It cannot be considered satisfactory in the hot days of summer, where a direct current through into the open air upon both sides obviously has an advantage. It is not altogether satisfactory, either, in stormy days in winter when the weather and direction of the wind is such that it is impossible to have the usual windows open, since it is then necessary to rely upon the openings into the Assembly Rooms, which can hardly provide ventilation other than insufficient.

The second essential, viz. a maximum amount of daylight, can be arranged for, nearly if not quite as well, by a school of the central-hall type as by any other. The third, direct sunlight into each classroom, is, however, difficult to arrange for in a school of the central-hall type, though, if this point is specially kept in view in the planning, a fairly satisfactory result can be obtained; one frequently, however, sees schools of this type planned with classrooms facing north. Opinion has somewhat changed in regard to the advantage of arranging classrooms so that the sun may shine in, but however much it may be advisable to avoid this in hot countries where the sun is almost constantly shining, there can be no doubt that in the more northern countries, and certainly in our own, the few very hot days which occur in summer must not be allowed to count as against the great majority of days when the sunshine is so welcome. Any disadvantage may be overcome by the use of blinds and curtains when necessary, and the presence of direct sunlight for some time during the school hours makes a vast difference, not only to the cheerfulness of the room, but also to the quality of the atmosphere; of its advantage from the point of view of the health of the children there can be no doubt. A practical acquaintance with classrooms, especially perhaps in the north of England, into which the sun never shines during school hours, and the contrast of such rooms with others, cannot but convince any one of the propriety of considering the need for direct sunlight into each classroom as a primary essential.

Pavilion Type

When we come now to test a school of the pavilion type by these three general requirements we shall find that they may be all perfectly met. As regards each

classroom, the essential feature in this type of school is that the classroom opens and ventilates into a fresh-air corridor or into, indeed, merely a verandah, so that perfect cross ventilation is secured, and further, as we have seen above, should the wind and rain prevent the usual windows from being opened, those on the corridor side may be used. Such a school, too, permits of all its classrooms, or as many as one chooses, facing in a more or less southerly direction: at any rate none need face more to the north than E. by SE. on the one hand nor W. by SW. on the other. The lighting of the rooms can also be perfectly carried out: whatever further need there may be for additional lighting of the side of the room opposite the main windows can readily be met; but we shall return to this point again. Thus, so far as the three main essentials go, the advantages seem clearly in favour of the pavilion type of school.

The Assembly Hall

Having now considered the main essentials in regard to the unit, the classroom, we may turn to the Assembly Hall, and we shall find that the usefulness of this room is closely connected with the type of school chosen. For what purposes, then, is a large hall needed in connection with a school? Its necessity has usually been considered from the point of view of providing a room for the assembling of children, but it also is needed for purposes other than this. Thus it is of great service when classes are being taken together for singing; when the weather does not permit of physical drill being taken out of doors such a hall is essential, and for such a purpose it is needed with great frequency throughout the winter. Then it is necessary to remember that the room may be needed as a gymnasium and provided with some

simple apparatus as used in connection with Swedish drill for older boys and girls. True this will not be necessary for children in an elementary school, but where there is no provision of specially built gymnasia, as may be the case especially, say, in an outlying district, in a large town or in a country district, it may be of the greatest convenience for older boys and girls in connection with continuation classes, for example, to have the use of a room of this sort in the evenings for a gymnasium. Further, in wet weather, when the children cannot well go out into the playground to play, they need a room which they can use in recess time. A hall in connection with a school should be judged then according as it fulfils the function of—

(1) an assembly room ;
(2) a playroom in bad weather ;
(3) a room where combined classes can meet, *e.g.* for singing ;
(4) a room for physical drill ; and
(5) a gymnasium.

Of course in the case of a very large school it may be practical to have, say, a gymnasium as a separate building distinct from any hall in connection with the school, but, as we stated at the outset, we are concerned with a school of moderate size only.

Viewed in the light of these tests, we shall find that the main room, as it is frequently called, of the central-hall type of school fulfils the first condition, of course, perfectly well ; indeed, it is built primarily as an assembly room. For all the other purposes it has two serious disadvantages, (1) due to its nearness to all the classrooms and (2) due to lack of satisfactory ventilation. Its proximity to the classrooms is disadvantageous from the point of view of noise ; this holds good if it be used for singing or physical drill or, above all, as

a playroom. And again, when used for similar purposes or as a gymnasium, much dust is raised, and this constitutes a very real drawback. The second disadvantage, viz. that connected with ventilation, operates under similar conditions. For any one of the purposes mentioned it is preferable to have windows which come well down and which can in the summer, for example, be thrown well open, so that being in the room is comparable to being out of doors. From the point of view, then, of utility the main room of a central-hall school fails in many particulars; indeed, it may be looked upon as planned and built as an assembly room primarily, and to be lacking in adaption for any other purpose.

A school built on the pavilion plan postulates a hall unconnected immediately with the classrooms. Such a hall may, however, take one of two forms. It may be quite detached and connected with the main part of the school by a corridor only, as in figure 14, or it may take such a position in the school as shown in figures 15 and 16. The exact position adopted will depend on the site and on the special requirements of the case, and upon the bias of those concerned in the erection of the school: it is a matter rather of detail than of principle. It will be evident, then, that, whether judged from the point of view of the three essentials necessary to be observed in the planning of a school or from the point of view of the value to be obtained out of the main hall, there are decided reasons for adopting the pavilion type. There are two main drawbacks alleged, one of which may be a very real drawback, and the other is probably largely imaginary. A school of the pavilion type spreads over a large area of ground, and in some districts this may be a serious objection. A difficulty is likely to arise, however, on account of the actual piece of ground available: the shape

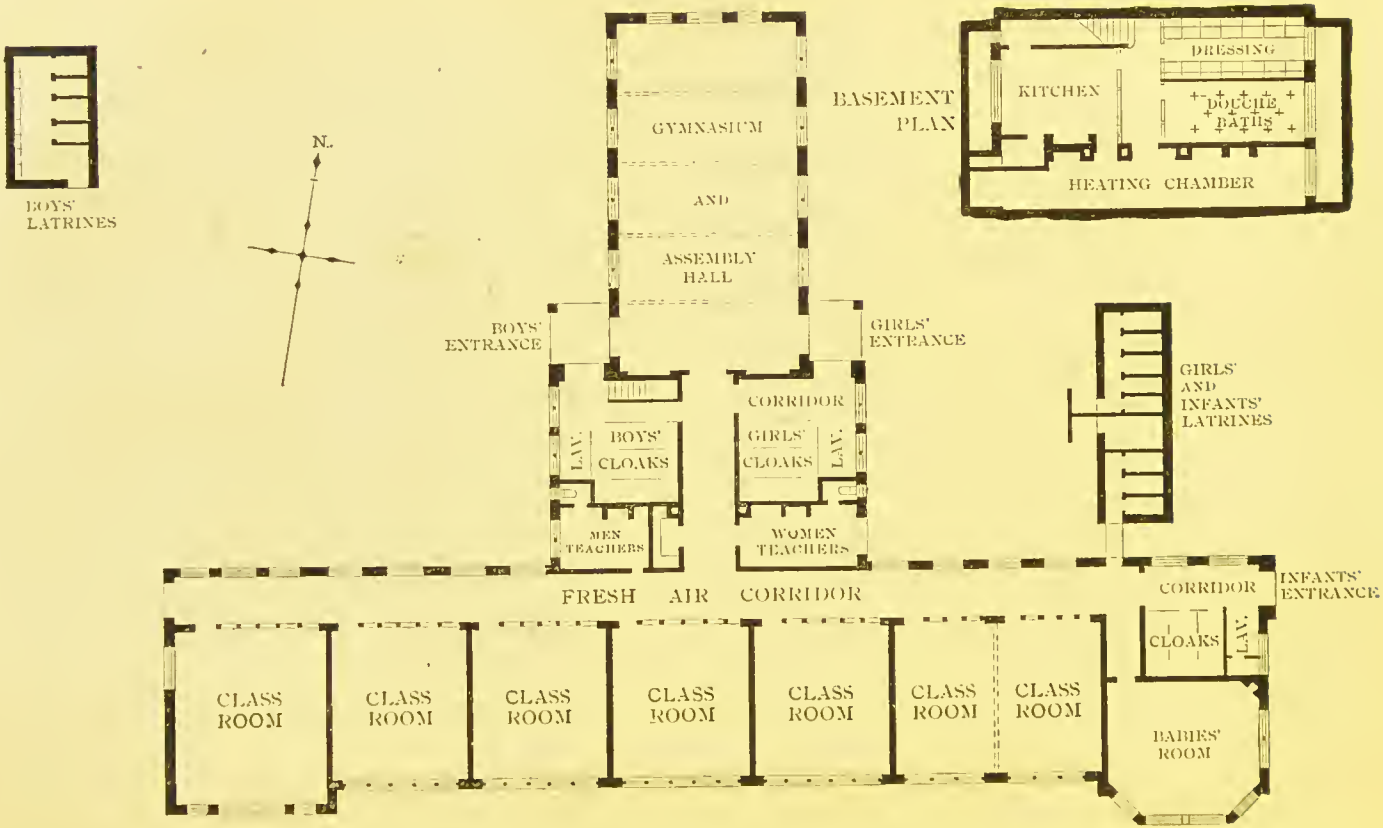


FIG. 14.—Bradford City Council Elementary School at Buttershaw. From the Annual Report of the Medical Superintendent, 1900. (Drawing kindly prepared by Mr. R. Kirkby, A.R.I.B.A., City Architect, Bradford.) Architect, Mr. Edwards, (late) City Architect, Bradford.

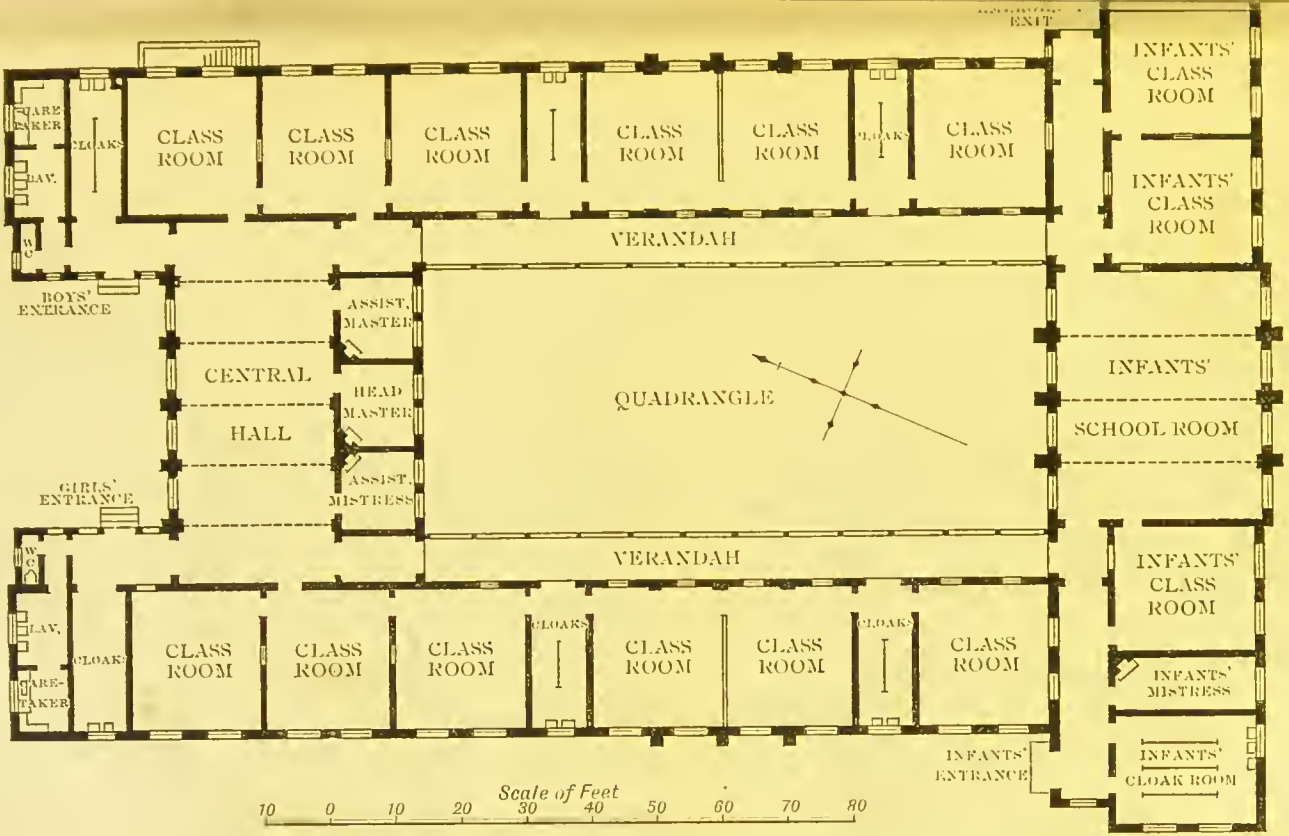


FIG. 15.—Hertfordshire County Council Elementary School at Letchworth. From a paper on "Elementary School Planning," by Mr. R. A. Kirkby, A.R.I.B.A., published in *The Builder*, August 21, 1909. Urban A. Smith, M.I.C.E., County Surveyor, Hertfordshire.

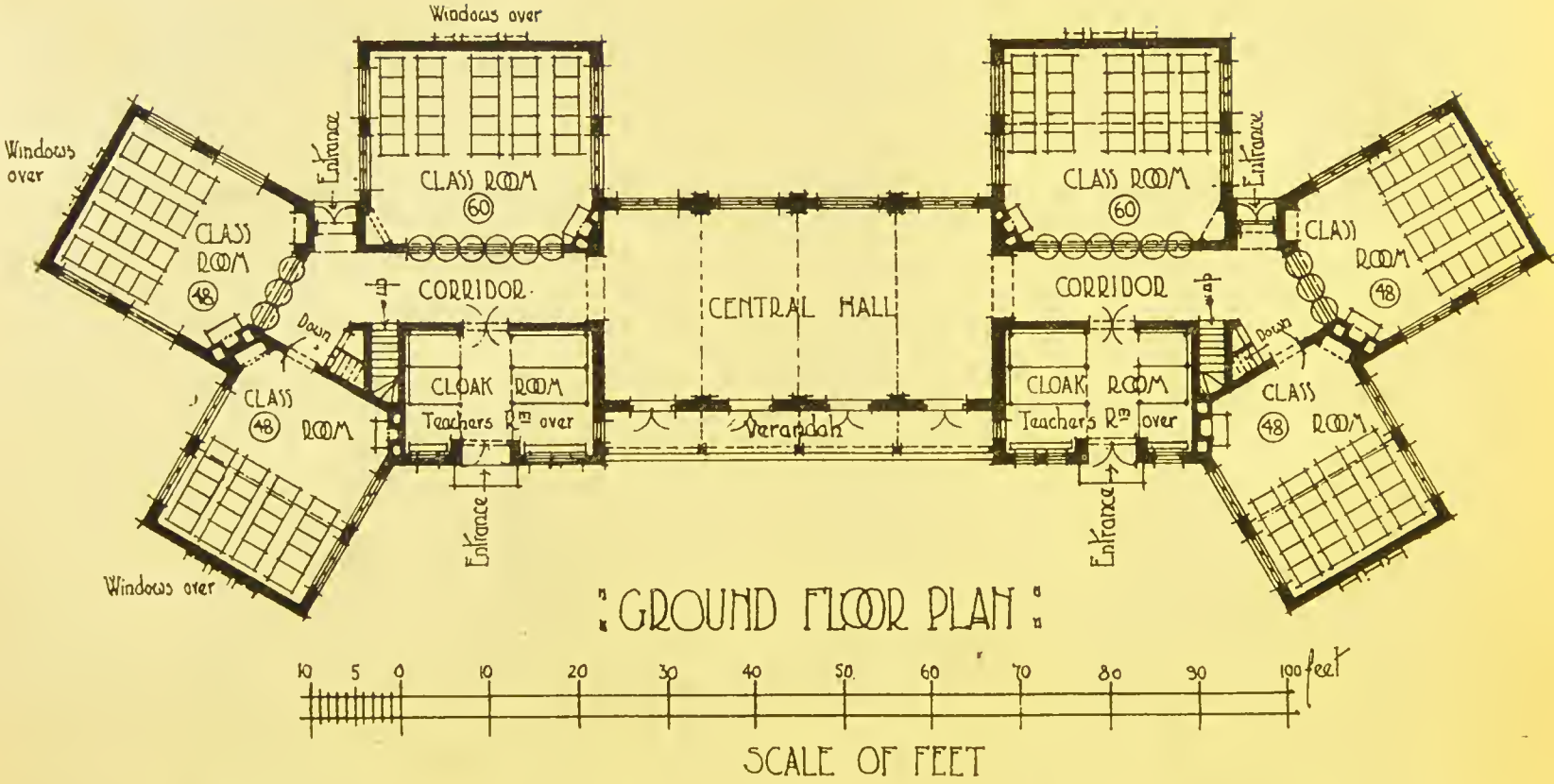


FIG. 16.—Derbyshire County Council. Elementary School at Shirebrook. From the Annual Report of the School Medical Officer, Dr. Barwise. 1909. George H. Widdons, A.R.I.B.A., Architect.

in some cases may be such as to make a school so planned difficult to carry out, but even then it must be an extremely rare occurrence if this could not be done in modified form. Moreover, it must be borne in mind that a pavilion school may be of two stories, and to a two-storied building there is, except in the case of very young children, no valid objection. The second objection raised is that the head teacher is unable to exercise so good supervision of the school as is possible when seated at his desk in the central hall and with his eye on the door of each classroom. This objection will, however, hardly permit of any scrutiny. Supervision by the head teacher other than that implied in a personal knowledge of each child, in so far as practicable, and in first-hand acquaintance in the classroom of the work of each teacher, cannot be considered of any merit.

Up to the present in England, schools of the central hall type have been almost universally built, and very fine examples of these are to be found. Opinion, however, seems veering round towards the pavilion type of school. This type has been more especially associated with the name of Dr. Reid, medical officer of health for the county of Stafford, and at his suggestion schools of this character have been built in Staffordshire during the past three or four years, and he has published some interesting articles and pamphlets on the subject.* A word should be added here in regard to the cost of the two types of school, and in considering this, care must be taken that what is being compared is strictly comparable. At the first glance a pavilion school appears to be the more expensive, simply on account of the

* See the "Planning of Schools, with Special Reference to their Ventilation," Geo. Reid, M.D., D.P.H. (London : *Public Health*, 1907), and on same subject see Report of Dr. Reid to the Staffordshire County Council Education Committee, 1908.

large increased area of outside walling, which might perhaps increase the cost from 10 to 20 per cent. according to the material used. Dr. Reid, however, points out that the detached hall may be used as an assembly room and for other purposes for more than one department, though there are serious objections to such an arrangement, and that in this way a saving may be effected as compared with the central-hall type of school. And, further, an appreciable saving may be effected to the rates if the detached hall serves, as has been suggested, the purposes of a gymnasium, and so in some districts obviates, the necessity of building a special gymnasium.

It will be noticed that we have all through discussed the question on the supposition that the school was to be "naturally" ventilated. The adoption of mechanical ventilation modifies some of the arguments used. Where this form of ventilation is adopted, the more compact the school the better, and from this point of view the central-hall type is admirable. All the other objections, however, against this plan hold, and especially those in reference to the use of the main hall. It should be added that a school built with a detached hall can, of course, be mechanically ventilated, should such a form of ventilation be preferred. Having now dealt, as fully as space will permit, with the general planning of the school in its essential features, we must pass to, first, certain details connected with ventilation, heating and lighting, and secondly to some consideration of the sundry component parts of a school, the furniture of the classroom, the cloak-rooms, the playground, etc.

CHAPTER XIX

THE SCHOOL BUILDING (CONTINUED)

Ventilation—Various methods—The pros and cons of mechanical ventilation—The "intermediate" or "gravity" system —"Natural" ventilation—How to render efficient—Heating of the school—Different methods—Lighting of the classroom—Artificial lighting.

THE ventilation of schools has been, and indeed is, the subject of frequent controversy and discussion. It will be found discussed in almost endless papers and pamphlets, and at congresses on hygiene it is hardly likely to escape attention. In attempts to solve the difficulties the question of ventilation has been subject to considerable lack of sense of proportion in its treatment, partly as the inevitable result of trade interests asserting themselves; all that tells for this or that "system" is magnified, and correspondingly disadvantages are minimized. What seems to be more especially called for at the present time is a consideration of the subject from a less biased point of view than has been the case in the past, and more especially shall we call in question the assumption which, almost without exception, underlies all discussion of the subject, viz. that satisfactory ventilation of a classroom without mechanical aid of some kind is an impossibility.

It will be apparent that a full discussion of the subject of ventilation in the way in which it is usually approached

will be quite impossible in the space at our disposal, and indeed for our purpose it is not necessary. We shall not enter into any elaborate discussion of the composition of fouled air or of the relative importance of the various injurious products of respiration ; any reference we have to make to these will be made when considering the question of heating. We shall assume simply that the whole problem is to renew the air with sufficient frequency as to make the air of the classroom as nearly like the outside air as possible, and this, it must be always remembered, not only in regard to its chemical content of, *e.g.* CO_2, but from the point of view also of its physical properties. That is to say, the air of the classroom must not only *chemically* resemble the outside air, but *it must feel like it.*

Methods of Ventilation

There are three main types of methods of ventilating a classroom ; these may be found in combination to some degree, still they may conveniently be considered as separate systems. These systems may be designated respectively the "natural" ; the "gravity" or "intermediate" ; and the "mechanical." In the first, natural methods alone are relied upon, *e.g.* open windows and doors, chimneys, roof ventilators, and various other arrangements, *e.g.* Tobin's tubes. In the second, advantage is taken of the fact that impure, heated air rises, and endeavours are made by means of special exit shafts and by creating a "head" in these by means of, for example, burning a gas jet or of steam pipes, to effectively cause the removal of the foul air. In the case of the third type, no reliance whatever is placed upon any such chance agencies as windows and doors, but a scientific calculation is made of the exact amount of air each

classroom requires when full of pupils, and by means of a fan air is propelled through ducts into each room at a given rate, and by means of another system of ducts the foul air is discharged from the building. The systems, it will be observed, may readily overlap. Thus, in the second case, mechanical means, *e.g.* a fan, may be used to assist the upward extraction of the foul air, and where mechanical ventilation is used provision may be also allowed for open windows under certain conditions. The main controversy, nevertheless, centres around the advantages and disadvantages of "natural" and "mechanical" ventilation. Though it may seem somewhat a reversal of the right order, we shall find it more convenient to consider "mechanical" ventilation first.

Mechanical Ventilation

The movement in favour of this form of ventilation arose on account of the extremely unsatisfactory ventilation of most elementary schools. Even at its best the ventilation was usually bad, and at its worst—and upon going into schools, especially while evening classes were being held, it might frequently be found in this condition—its failure was complete indeed. The continual excuse for the air of a room being so foul was draught caused by open windows, and at the base of all advocacy of mechanical ventilation was the assumption that it is impossible to change the air of a classroom sufficiently often to ensure its purity by "natural" methods of ventilation. This statement is considered still by many school hygienists as being a true one; we shall need, however, to consider it presently.

It was clear that purity of the air in a classroom could, at any rate in theory, readily be obtained by mechanical means. By means of a suitable system of

ducts, one set through which air could be propelled into the classrooms, and another set through which the air could flow out, it was manifest that the air could be changed with practically any frequency desired, the volume of air flowing in and out of a room in a given time depending upon the propelling force. Not only was it therefore apparent that a classroom could, from this point of view, be satisfactorily ventilated, but it seemed clear that the problem of heating the room could be solved at the same time. There are at the present time many schools in this country mechanically ventilated and heated in this way, some where the principles have been carried out badly or only indifferently, others where they have been carried out in great perfectness. In criticizing the system, and in considering its advantages and disadvantages, we shall do so when the system is seen at its best. Any criticism, however, may well be preceded by a short account of the system; it is found modified in various directions, but these we have not space to enter into.

Four main conditions have to be fulfilled: (1) The air must be screened so that it may reach the classroom in as pure a condition as possible; (2) arrangements must be made to ensure the propulsion of the required volume of air into the main entrance duct; (3) means must be present of moistening the air to the required degree of humidity; and (4) there must be apparatus for heating the air to the required temperature before it reaches the classroom.

For purifying the air various forms of screens have been adopted: it is, of course, only attempted to rid the air of its more gross impurities, such as dirt, soot, etc. Too fine a screen is impracticable, since so much difficulty would be experienced in drawing the air through it. Coke breeze forms a very serviceable screen, while finer

forms are also in use, *e.g.* those made of jute or cocoanut fibre. These latter screens cleanse the air rather more thoroughly, but on the other hand need the use of more power to draw the air through. A coke screen is, as a matter of fact, sufficiently effective for all practical purposes. The heating of the air so as to ensure the warming of the school at the same time as its ventilation is best undertaken by batteries of steam coils placed at the bottom of each shaft to each room. The temperature of these can, of course, be regulated, but the main method of regulating the heat of the air as it passes up the shaft to the classroom is to regulate the amount which passes over these batteries, a simple mechanical device determining what proportion of the air, the whole if so desired, shall pass straight up the shaft without passing over the battery, and what proportion shall pass through the battery on its way. In this way the requirements of each classroom can be separately studied.

The amount of water vapour in the air driven into the school can be regulated with considerable accuracy. On some days there will be no need to moisten the air at all, but the deprivation of moisture consequent upon heating the air will usually cause the air by the time it reaches the classrooms to be seriously below the normal standard, and hence steps must be taken to moisten it before it enters. This may be done in the first place by allowing a stream of water, the quantity of which can be regulated, to flow over the jute or coke screen, as the case may be, when the air, as it passes through, will become charged with a certain amount of water vapour. This, however, frequently does not suffice adequately to moisten the air, and steam jets are provided in addition in connection with each "battery" spoken of, at the bottom of each shaft.

All passages and ducts in connection with this system

should be kept absolutely clean, and the inlet ducts should be built of glazed bricks. The air is drawn in from the outside and driven along the system of ducts into the school by means of a fan, the size and the velocity of which will be determined by the amount of air required.

Such in outline is the system of mechanical ventilation. What are its advantages and what its drawbacks, judged, not as has already been suggested by the results in a school where faulty construction makes it of necessity more or less a failure, but by the system at its best?

(1) The amount of air supplied can be accurately gauged, so that the air of a classroom can be changed with whatever frequency is desired.

(2) There is very effective control of the source of the air allowed to enter; it need not be taken from near the ground, but, by means of a shaft or small tower carried as high as may seem necessary, the air may be taken from as many feet above the ground level as may be considered advisable.

(3) The mechanical impurities in the air can be removed, or at any rate in large measure; this is, of course, a very real advantage in large towns and in very foggy weather, when very considerable, though not complete, cleansing of the air can be effected.

(4) The temperature of the air can be regulated with much accuracy, and the requirements of each classroom separately studied.

(5) The moisture can be similarly regulated; and

(6) In very hot weather the temperature of the rooms is appreciably lower than that outside.

Alongside of these great advantages, however, advantages, too, which count to the full in a large manufacturing town, there are, on the other hand, some considerable disadvantages.

(1) The system is costly, both in its initiation and in its upkeep, partly on account of the actual amount of fuel used, and partly because the system needs, if it is going to be run successfully—and successful running depends upon constant intelligent attention to detail at every point—skilled supervision.

(2) However satisfactory a chemical examination of the air in the classroom may show it to be, there is nevertheless something wanting in the physical properties of the air: there is frequently an unmistakable lack of freshness; the air feels stale on occasion, especially to any one not habitually breathing it.

(3) It is difficult to distribute the current evenly over the room, and draughts are apt to occur in one or two places, and to be a serious inconvenience either to teacher or scholars; this, however, is but a minor objection, and can usually be met.

(4) There must inevitably be a considerable accumulation of foul air in the neighbourhood of the outlet, and from the construction and arrangement of a classroom some child or children must inevitably sit in the near neighbourhood of the outlet.

(5) The absence of open windows is a bad training for the children.

In coming to a decision in regard to this question it is important not to allow one's self to be prejudiced by the fact that some schools which are mechanically ventilated are a failure. The system seen at its best unquestionably works extremely well, and almost, indeed, without a hitch or complaint. But even then the question must inevitably arise, is it necessary? Is the increased cost worth incurring? Are the hermetically sealed windows worth the price paid for them? To those who believe that efficient ventilation can never be obtained by so-called "natural" means, the answer will probably be in

the affirmative, and, indeed, such an answer one can well understand being given, when the building of a school in the centre of a large manufacturing town is under consideration.

Intermediate or Gravity System

Coming now to the intermediate type of ventilation, known sometimes as the "gravity" system, an attempt is made to increase the volume of air passing through a room in a given time by creating, by means of heat in some form, a "head" in a ventilator in the ceiling of a room, which opens into a duct which is again connected with the ducts from other rooms, and the foul air from all of these is discharged into the open-air through a common exit shaft. The theory is that as air is admitted at the bottom of the outside wall of the room and passes over radiators, or as it comes in through the open windows or through such contrivances as Tobin's tubes, it permeates the room and is gradually drawn, as it rises up, to the extracting shaft in the ceiling, and by this means the air, so soon as it is fouled, passes out of the room, its place being taken by incoming fresh air. The system as a means of changing the air in a classroom with sufficient frequency is more satisfactory in theory than in practice. The necessary change of the air in the room can only be depended upon to occur when ideal conditions are present, *e.g.* on a still, cold day. The action of the wind blowing over the exit shaft may seriously impede its usefulness; there are many cross-currents in the room, and downward currents, in spite of the "head" in the extracting shaft, and the foul air mingles with the pure throughout the whole room. The action of the system is, too, frequently interfered with by open windows, indeed under some conditions the extracting shaft will be found

to be hardly acting as such at all. Its extracting power can of course be assisted by some mechanical means, *e.g.* an electric fan in the ventilator in the ceiling or in the main exit shaft. As soon as the system becomes complicated, however, in this manner one finds one's self adopting a "mechanical" form of ventilation, which in regard to *e.g.* control of the quality of the air supplied, opportunity for its moistening, and precision of working cannot compete with the form of mechanical ventilation already described. This intermediate or gravity system cannot, indeed, be rightly regarded as a "system" of ventilation at all; it can at most be looked upon as an adjunct to a frankly natural system of ventilation by means of open windows, an adjunct which may prove useful on certain occasions and in certain conditions of the weather; how far it is worth troubling about will depend upon how far we conceive a purely "natural" system to be efficient. This, then, we must now discuss.

Natural System

As already stated, the criticism directed against natural ventilation is that it cannot be efficient, cannot ensure the changing of the air with sufficient frequency, without the creating of draughts to such a degree as to make dependence upon it an impossibility. There is a great deal to support this contention; "natural" ventilation in the past has frequently meant practically no ventilation at all. How far this has been due to the imperfect arrangements made for securing the admission and exit of the air it will now be our duty to inquire, and we shall consider the conditions which appear necessary if "natural" ventilation is to prove efficient, and also the further question as to whether these conditions are such as to be practical of adoption.

There are several recent developments which tend to a favourable consideration of the question of "natural" ventilation. There is, for instance, a more wholesome appreciation of fresh air than formerly, and the principles upon which sanatoria are built and constructed are permeating into ordinary life. There is, too, less horror of "draughts," not that there is any virtue in what can reasonably be called a draught, but the very feeling of air in motion is taken exception to by some people; further, there is a tendency to allow an increasing amount of floor-space per child; where, as is sometimes the case, and advantageously too, fifteen square feet are allowed per child, it is clear that there will be less difficulty in changing the air frequently than when only the original minimum eight square feet is allowed. Then, also, there is a general tendency to work in lower temperatures than formerly, and this has an important bearing on the question. Lastly, in the past no adequate attempt can be said to have been made to ventilate a classroom by "natural" methods, and since more thought has been given to the subject the possibilities in this direction have considerably enlarged.

In order to make "natural" ventilation satisfactory the following conditions need to be satisfied:—

(1) Arrangements must be made for the continual entry of fresh air into the room while the scholars are in it, and in such a way as not to cause a violent draught in one spot.

(2) There must be efficient cross-ventilation so arranged that the main ventilation of the room can be effected from either side.

(3) All windows must be very easily opened, the mechanism being such that a child can manipulate it.

(4) A large part of the window space must be capable of being quickly thrown open so that a complete

flushing of the room with air in a few minutes can be effected, and this is necessary also so that in the summer time, when the weather permits, the air can stream through the room and so render it as pleasant as and pleasanter than working out of doors.

There can hardly be any doubt that these conditions, in so far as they can be fulfilled at all, will be the most capable of fulfilment in a school planned upon the pavilion principle, each classroom opening into a fresh-air corridor or simply into a verandah, as is the case in the schools more recently built in Staffordshire. The actual arrangements of the windows are matters of considerable importance. Perhaps the most important point to bear in mind is that sufficient windows should be made to open; some even advocate that there should be no part of the window space sealed. This, however, is not literally necessary in order to carry out the above conditions. Nevertheless, windows made to open need not be opened unless required, and it is certainly better to have too much of the window space available for opening than too little. Then the principal window should occupy—and to this point we shall refer again when speaking of the lighting of the room—the whole available space on one side of the room, so as, so far as ventilation is concerned, to distribute the air as freely as possible. The following arrangement best permits, in the opinion of the writer, of the conditions for efficient ventilation being effectively carried out. Along the top should be arranged a row of swivel-jointed windows; these allow of the admission of little or of much air, and are to be preferred to hoppers in this situation. At the bottom of the window should be alternately hoppers and swivel-jointed windows hung vertically; if preferred these can be made as casement windows opening either upwards or outwards. The rest of the window

can be made to open if desired, but it can hardly be considered absolutely necessary for it to do so. Such an arrangement gives wide choice; atmospheric conditions outside vary much, and corresponding variations can be made in the manner in which the air is admitted; the hoppers at the bottom of the window will be found of the greatest service, and in summer, and on warm days generally, and for flushing the room, the large swivel-jointed windows or casements are indispensable. On the corridor side of the room the window space should come down, as suggested by Dr. Reid, to within about six feet from the ground, and at this level hoppers should be arranged for, thus maintaining always an excellent form of cross-ventilation. Above them, and opening directly into the outer air, should again be a row of swivel-jointed windows for use on occasions when the conditions outside make it almost impossible to have more than a slight amount of window open on the other side.

The efficient working of a "natural" system of ventilation such as the above must obviously depend much upon the teacher. With many teachers, one is bound to admit, it would not succeed, so dormant is the "sanitary conscience," but with the newer ideas upon hygiene already alluded to, and with the increased emphasis on the hygienic side of education which is now being laid in the training college curriculum, the personal factor in regard to the teacher will probably not tell greatly against the system in the future. How well both teachers and scholars are able to bear not only fresh air but comparative cold is well shown in the Open-Air Schools, and the conditions suggested above are, of course, far less rigorous than those obtaining in such schools.

Such an arrangement of ventilation as indicated above does away entirely, in the opinion of the writer,

with any need for the usual ventilation accessories ; all such apparatus as Tobin's tubes and roof ventilators of all kinds are not only unnecessary but practically useless ; the latter, moreover, are apt to act as inlets at times, and they postulate dust-collecting ducts which there is considerable satisfaction in dispensing with.

The further question which remains is as to how far the above method of ventilation can be considered satisfactory where the classrooms open into a central hall. That this arrangement cannot possibly be as satisfactory as in the case of a school built on the pavilion plan seems clear even when one side of the hall is unsurrounded by any other part of the school building, and indeed, if natural ventilation is going to be frankly depended upon, the central-hall plan must be given up and the pavilion principle carried consistently throughout the whole school.

The Heating of the School

A consideration of the heating of the school naturally follows that of its ventilation. Indeed in a "mechanically" ventilated school the two are effected at one and the same time. Into any detailed description of the different methods of heating adopted we do not intend to enter. They may be classified, so far as school buildings are concerned, according as the heating is by (1) high-pressure steam, (2) low-pressure steam, and (3) hot water. Heating by means of the open fireplace need not detain us: if it be used at all it will be an accessory only, pleasant, no doubt, but hardly justifiable except in very small schools on account of the trouble and expense involved. Stoves cannot be considered satisfactory: there is usually no justification for them other than the cheapness of their installation.

High pressure steam is unsatisfactory for schools ; the

heat is too intense and too concentrated in one place; though cheaper than other methods in installation it is if anything more expensive in the management; moreover, through contact of the air laden with dust particles a peculiar quality is transmitted to the air, and an objectionable smell is almost necessarily associated in the methods of heating by steam under pressure. Hot water, then, or steam at low pressure, is the best method. Opinions will differ as to how far the heating surface should be by means of pipes or radiators; in the former the heat is excellently distributed and additional coils can be put under the main window. Radiators are more pleasing to the eye, and the pipes connecting them need be only quite small; it costs more, however, to instal a system of radiators than a system of hot-water pipes. Many prefer radiators in that they allow of air, admitted from the outside, being drawn over them, so that a continual stream of warmed, fresh air is brought into the room. This does not appear to the writer to be in practice of any particular advantage, and where a class-room is ventilated as described above it is not necessary. From the cleanliness point of view it is difficult to have anything more satisfactory than hot-water pipes, sufficiently raised from the ground and sufficiently far removed from the wall to allow of their being got at all round for cleaning purposes. In the case of the gravity or intermediate system of heating referred to early in the chapter the admission of fresh air over a series of radiators is an essential part of the system, the air being then supposed to stream up and to carry all foul air with it and to be discharged through the ventilator in the roof.

Whatever system of heating is adopted, it is of great importance to have sufficient surface; too little is a common fault. This is, of course, of especial importance

in a school built on the pavilion plan, where "natural" ventilation is alone relied upon. One must admit that considerable expense is involved, since wherever there is a large amount of glass, and this we shall find necessary quite apart from the question of ventilation, correspondingly more heating surface becomes necessary—twenty to thirty per cent. more than that usually adopted. Each classroom should be separately controlled, so that the heat may be regulated as required.

In regard to the temperature at which a classroom should be kept, much variation of opinion exists. One thing, however, is undoubtedly true, viz. that there is an increasing tendency to lower the temperature which it is considered necessary to maintain. This is an important point, and has, as we have already seen, considerable bearing upon the possibility of ventilating a classroom by "natural" means alone. There is no need for the temperature to exceed 60° F., and it should not be lower than 55° F.

The Lighting of the Classroom

The adequate lighting of a school is obviously a matter of the first importance; nothing is more notable in many of the older schools, unless it be their inefficient ventilation, than their inadequate lighting. We shall be concerned both with daylight lighting and with artificial lighting. The latter has received, for the most part, but very scant attention in England, partly perhaps because it is not often needed for more than a comparatively short time in a day-school. Evening classes are, generally speaking, carried on under the most crude methods of lighting, and more attention to this question would seem to be urgently needed.

It may probably be safely stated that, so far as

daylight is concerned, and provided it comes from the right quarter of the classroom, it is impossible to make too much provision for its entry. The main light must come—and this rule permits of no exception where side-lighting is resorted to, as it practically always is in the construction of classrooms—from the left, and the architect may safely, irrespective of any question as to the relation of the space through which light is admitted to the amount of floor space, arrange for the maximum amount of light possible from this direction. The amount of light to be admitted must not be judged by that necessary on a sunny day or when the sky is clear, but by that necessary during the winter months, on dull days, for these between them form a large proportion of the whole. Excessive daylight can be excluded, but when insufficient it cannot be added to; further, too, the part of the room the most remote from the source of the light is the part to be considered. This necessity for abundant entrance of daylight must be borne in mind when constructing the window; not only should this extend as high up as possible and as close into the corners as possible, but wide mullions must be avoided, as they cast very troublesome shadows. Some even advocate the throwing of a steel girder right across the top of the window so as to avoid the use of any mullions at all except such as form part of the ordinary window-frame. Where, however, there are no central piers the framework of the window has to be made correspondingly heavy to resist the wind pressure.

Granted, then, that all the possible available light must be obtained from the main window on the left hand of the scholars, is any further provision for lighting the room necessary? Additional lighting, either from behind in the corner furthest removed from the main window or from the right hand, is permissible, always

provided it is not sufficiently strong to counterbalance the left-hand light. This means that the windows used must not come too far down, preferably, from this point of view, not lower than eight feet from the floor. What is chiefly aimed at is rather illumination of the white ceiling, which will then reflect enough additional light to light up the darker part of the room. We have already advocated that the windows which open into the fresh-air corridor should come down within six feet of the floor from the point of view of ventilation. Probably the light from these, coming from the north or very largely so and already having had to traverse the corridor, will not be found too strong; but more opaque glass can be used for the lower part of the window if necessity should arise.

Artificial Lighting

The artificial lighting of classrooms has, comparatively speaking, received but scant attention. The lighting of nearly all the older schools is bad, both in regard to the form of luminant used and to the positions of the lights. Even to-day, with the many improvements made in connection with gas illumination, the naked gas jet, and by no means even then with the best form of burner, is used. How extremely unsatisfactory this is is amply demonstrated every time one goes into a classroom artificially lighted in this way. The illumination is nearly always insufficient, while the atmosphere is very objectionable. Suitable incandescent burners and shades will increase several-fold the light obtained from the use of the same amount of gas, and the air will be less polluted. For convenient and satisfactory lighting of a classroom, however, the electric light is greatly superior to gas in every way, its only drawback being due to the

fact that it is more costly, probably at present about half as costly again. Many of the classrooms in schools on the Continent are lit by the indirect method, *i.e.* a powerful light from as many foci as seem desirable is reflected on to the ceiling and the light is then reflected evenly all over the room. The effect produced is excellent, and there are no lights to catch and dazzle the eye. To produce an illumination equivalent to that obtained by direct lighting needs, however, a more powerful source of light, and the method is in consequence a more expensive one.

CHAPTER XX

THE SCHOOL BUILDING (CONCLUDED)

The classroom—The desk and seat—The cloakroom—Lavatory accommodation—Sanitary conveniences—The shower bath—The teachers' room—The playground.

WE must now pass to a consideration of some of the more important details in connection with the classroom and its furniture and with the various other parts of the school. Questions of technical detail will be avoided, the aim being to emphasize the more essential points and others which are of real importance, though they may sometimes be looked upon as matters of comparatively small moment. The general structure and detailed arrangements of the school have suffered considerably in the past through having been viewed without due proportion. The newer teaching of a sound hygiene has substantially, as is the case in educational matters generally, altered the focus, and the recognition of this is imperative if efficient, up-to-date schools are to be built.

In regard to the size of the classroom, the minimum floor space at present required by the code for Elementary Schools is ten square feet per child. This is considered by many too small an allowance, but to raise it to fifteen square feet would necessitate classes of not more than about forty children. This, however, is considerably below the maximum number allowed. The arrangement of the

seats and desks and the character of these lend themselves to almost unlimited variety of opinion; here, as in all matters connected with the school, theoretic requirements and apparent scientific accuracy must not be allowed to hold the balance unduly as against practical convenience. We need scarcely enter into detail in regard to the question of the arrangement of the seats and gangways and whether arrangements are or are not made for the raising of each row of desks slightly above the one in front; the actual type of desks and seats used will, however, need careful attention.

The Desk and Seat

The seat and desk must be considered together in relation to one another; they must always, even if not directly connected, be looked upon as one piece of furniture. Some term for this corresponding to the German "subsell" is needed. The following classification of seats and desks may be made:—

(1) The continuous desk with continuous seat.

(2) The continuous desk and individual seat.

(3) The dual desk and associated seat.

(4) The single desk and single seat which may be either (*a*) adjustable or (*b*) not adjustable.

The old-fashioned continuous desk and continuous seat is not permissible, and in so far as it survives only does so because the arrangements of the school proper are sacrificed to other considerations. As a revolt from this type the dual desk was very generally adopted, and it has the advantage of permitting of ready access to each child, and it allows each child also readily to stand free out of the desk. The dual desk has the disadvantage of the seats not being separate, and they are, moreover, not convenient for cleansing purposes. From both these

points of view the arrangement of the continuous desk and the individual seats is preferable: it has the advantage of easy access to the scholars, and permits of the scholars standing out of the seats, while for simplicity of structure and ease of cleaning and sweeping it cannot be excelled. Each seat is supported on a pedestal, and similar pedestals at convenient distances support the desk. Of single desks and seats there is great variety and room for considerable elaboration of the desk to meet different requirements. Much difference of opinion exists as to the advantage or otherwise of the single desk and seat system for elementary schools. In the ideal school each standard or class should have its own classroom, and each child should be allotted its own place in that classroom, and should have its own seat and desk properly adjusted for it. Unless this be done, the whole advantage of a separate desk for each child is lost.

As things are to-day the best arrangement for an elementary school seems to be the continuous desk with single seats, and to arrange that the back row is larger in size than the middle, and the middle than the front. Probably three gradations are sufficient, the two front rows being the same, the next two for somewhat taller children, and the back row for the tallest children of all. This applies, of course, in the case where, as commonly obtains, there are five rows in all. Even such an arrangement will not be made full use of. Many teachers still insist upon seating the sharp children, however small they may be, upon the back row, and the tallest child, if it is dull, may be placed in the front row. Children who are somewhat deaf and those of defective vision must be placed in the front row, though in the case of many of these what is needed is correction of the defect first, and then only when such cannot be satisfactorily carried into effect should the children occupy

front seats. When each child has its own desk it does not matter if, for any reason, big children are obliged to sit in front, as their desks and seats will be adjusted accordingly. Still, as already said, adjustable single desks and seats are not as yet practicable in elementary schools other than in exceptional circumstances. In secondary schools there should be no question about the matter. The classes are smaller, often not more than half the size of those in the elementary schools, and these older boys and girls with their many books and school belongings should have each their own desk and seat. At the beginning of each term the desks should be adjusted and locked, so that no one can interfere with them other than the teacher of the class. It is true that each class does not always remain in the same room, but the seats are occupied by the same scholars, at any rate for the greater part of the time. Should another class habitually or occasionally use the classroom, the boys and girls can be sized and allotted to the places most nearly approaching their requirements. Of course where, as is the case when a special room is allotted, say, for the teaching of geography or of a foreign language, the desking of it is a very difficult matter, the most that can be done is to arrange the seats and desks in rows, those for the smallest pupils being in front, and those for the tallest behind, the other rows being arranged for the intermediate heights. Whatever class was then in the room would naturally sort itself according to the size of the individual pupil.

In regard to the seat it is important that it should be large enough, and in the case more particularly of the older girls space should be allowed for the clothing. The back rest is often made too small. The best form of back rest is that shaped as in the case of a common kitchen chair. The relation of the end of the seat to

that of the front edge of the desk is important: as a general rule these should coincide in a vertical plane, as in Fig. 17*b*, but with a large seat the front edge of the latter may project a little underneath the desk edge. There should, on the contrary, never be a gap between the two. Technically, that is to say, the "distance" may be "nil" (*b*) or slightly "minus," (*c*) never "plus." (*a*)

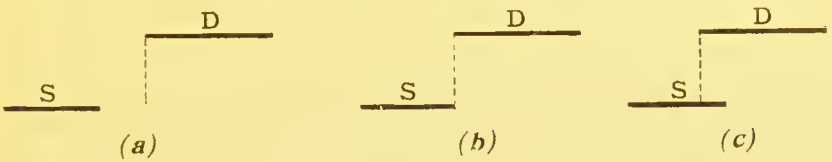


FIG. 17.

THE CLOAK ROOM

We pass now to some of the accessories of the classroom. All other parts of the school must be considered as subservient to the classroom, which should form the pivot around which the whole school rotates. The cloakrooms need careful consideration, and the following points should be observed: (1) Each child should have its own peg, and the pegs should be so arranged that the clothes do not overlap; (2) the rooms should be well lighted and well ventilated; (3) the rooms should be so heated as to make possible the drying of the clothes. Practical difficulties appear to stand in the way at present, but in the future, no doubt, ample provision will be made for the children to change their boots when necessity arises, and boot-boxes will be provided sufficiently heated to permit of the boots being dried during school hours.

LAVATORY ACCOMMODATION

The lavatory accommodation must be ample if a high standard of cleanliness in schools is to be arrived

at; and it cannot be too high. It is advantageous to have both hot and cold water laid on, and ample soap and sufficient towels should be provided. It is at present probably too much to ask that each child has his or her own towel, and that each girl, at any rate, has her own brush-and-comb, but there is much to be gained by such an arrangement.

The Sanitary Conveniences

The sanitary conveniences cannot be too carefully planned. Where the water-carriage system is adopted, they can without any objection be placed close to the main body of the school; there is not the slightest reason for removing them to the far end of the playground, though such a plan is still frequently adopted. They should, of course, be cut off from the main building and approached by a practically open corridor. It is advantageous to have the walls constructed throughout of glazed brick; and wherever feasible pedestal closets should be used with a polished top of hard wood, each pan having, unless of course earth closets are used, its own flushing arrangement. This latter reform is especially required in these days, when there is a tendency to insist upon water closets being put into all forms of cottage property, and the argument against the use of the separate flush, that it would be misused by the children, is evidence of how necessary it is to educate the children in the use of such apparatus. Urinals require to be constructed of the best non-absorbent, impervious materials, and kept well flushed if they are to be kept sanitary. The minimum number of water closets required by the Regulations of the Code, is one to every 30–50 boys, and one to every 20–25 girls. Also 10 feet of urinal must be provided for every 100 boys.

The Teachers' Room

Each school should, of course, have its Teachers' Room or Rooms, according to the requirements of the School, with suitable lavatory accommodation attached. Wherever feasible in a new school, it would be advantageous to have a small room provided for the purposes of the medical examination of the children.

The Playground

The playground should be ample and, wherever possible, the minimum requirement of the Code, viz. 30 square feet to each child, may with advantage be exceeded. Every effort should be made to include a field in the property of the School, to be used for school games of all kinds. The surface of the playground proper should be well asphalted : other surfaces for the most part are unsatisfactory as being very dirty in bad weather, and are the cause of much unnecessary dust and dirt being conveyed into the school. Wherever the climatic conditions will allow of it, provision may with advantage be made for trees and shrubs and a certain amount of flower border. While upon this part of the subject it should be noted that the caretaker's house should be made to harmonize with the school building, and a plot of ground for gardening purposes should, wherever practicable, be attached to it.

In the planning of the school the æsthetic side should not be forgotten. The keynote should be everywhere simplicity ; perfect beauty and perfect hygiene are quite compatible. The school architect should be, of course, as should all architects, an artist : that does not mean that the construction of the school will

cost more ; a beautiful school simply built may cost less than an ugly and ornate one. The internal decoration should receive careful thought. The selection of wood is very important. Pitch pine is frequently used ; it is hard and durable. Good pitch pine is, however, at the present time expensive, and varnished pitch pine is not a wood which by any means commends itself to many ; the tone is raw and cold. Oak is, of course, excellent ; it is not very much more expensive than pitch pine, but costs more in the working of it up. A cheaper and yet satisfactory wood is the best red deal, and this lends itself well to staining and flat varnishing ; a beautiful warm brown can be obtained, and the colour improves with wear. The walls should be tinted, preferably a soft grey-green in the more sunny classrooms, and an ochre tint may be used in the less sunny rooms, in the cloak-rooms and passages. There is no need to be too bound by theory to any one shade, but subdued colours are indicated throughout the building, and yellow and red tints should be avoided in all classrooms naturally bright. Protection from the sun must be provided in all rooms into which the sun shines during school hours, and care must be bestowed upon the question of the material and the colour selected. There is much difference of opinion, and much room for it, in connection with what is most suitable for the purpose. Probably nothing will really be found more satisfactory than thin curtains of a green colour hung in the simplest manner possible, capable of being easily drawn and easily taken down for shaking and washing ; they are more satisfactory than blinds, and give a quality to the room quite lacking when blinds are used. The most satisfactory arrangement of all, however, is to have outside blinds, and if only the money is forthcoming, and the best possible obtained, they will well repay the outlay.

CHAPTER XXI

CONCLUSION: THE PARENT AND THE STATE

General considerations—The connecting-up of the home and the school—The official and the voluntary worker.

IN the preceding pages we have dealt with the child as the school child, and with the responsibilities of the Education Authority for its training and education. These responsibilities have greatly developed within the last few years, and there is in some minds a genuine alarm lest responsibilities that ought to be undertaken by parents should become transferred to the shoulders of the Local Education Authority. This fear, it must however be remembered, is no new one, and probably on each occasion in the past, when the State has assumed the function of guardian, the complaint has been raised that parental responsibility would be thereby diminished.

The question is complicated by the fact that it is needful to view the necessity for State action from two points of view, and confusion of thought is apt to arise if these are not kept separate. It must also be admitted, however, that, to some degree at any rate, they cannot be considered the one apart from the other.

The State may take action on *financial* grounds primarily. It may for this reason feed an underfed child, the parent having no money wherewith to buy food, however much he may be desirous of doing so, and, so great may be the fear of tempting other parents to

neglect to feed their children, that all possible steps would be taken to keep such action within the narrowest bounds possible. Similarly the State may feel itself driven to make arrangements for cleansing a child on account of the impossibility of the parent providing a bath in the home or of finding the money for a fire by which to heat the water. Such action, again, however, it would keep within the narrowest bounds possible.

But the State may act primarily on *educational* grounds. It may see, as we have in several places throughout the book suggested, that advantages from the educational standpoint are to be derived from retaining the child at school for the day, and that for demonstrating such educational advantage no opportunity is greater than that afforded by the midday meal, taken in common by all the scholars. Taking this point of view, then, everything will be done, to make the midday meal as attractive as possible, and every encouragement will be given to the children to remain at school. Or again, in the matter of bathing the children, the State may act primarily upon educational grounds. So far from discouraging bathing at school, it will endeavour to insure that *all* children attend the shower or swimming bath, because of the advantages which accrue, physical, mental and moral, as pointed out in a previous chapter.

In all the many questions which arise as between the parent, the State and the child, probably the only safe line to take is to endeavour to ascertain what are the reasonable conditions which must be fulfilled in order to allow of the education of the child, using the term "education" in its widest sense. These conditions, the State must endeavour to obtain. If the parent cannot or will not supply the essentials, and if it is not possible, on the one hand, to put him in a position to do so, or on the other, to compel him, then the duty of the State

seems clearly to make the necessary provision. It is not permissible to stand by and let the child suffer merely in order to endeavour to teach the parent a lesson in responsibility. If it comes to a question of deciding between parent or child, there should be no hesitation as to the decision. The nation cannot afford, either in justice to the child or to itself—for the child will soon become the man—to countenance inefficiency.

Such an attitude carries with it no *laissez faire* doctrine with regard to the parent. The community that is most active in insuring to the child, otherwise deprived of them, its inherent rights, must at the same time be equally concerned to see that conditions are removed which prevent a parent from fulfilling his obligations, and also, where responsibilities are determinedly evaded on the part of the parent, to see that they should be with equal determination brought home. There is no insurmountable difficulty in doing this, provided the community really desires to act.

Further, it cannot be too clearly understood that the work of the community on behalf of the child acts undoubtedly in the direction of stimulating the parent: it awakens responsibility and causes the parent to be alive to the importance of defects to which previously no, or but little, attention was paid.

There are, moreover, many ways in which a parent may exercise responsibility, and the method may vary from time to time. It was previously in large measure the responsibility of the parent to teach his own child himself; his responsibility now lies in the direction of seeing that the child attends school regularly, to be taught by some one else. So many are the opportunities for the training of the child on the part of the parent, that where it is found that concerted and co-operative action can best bring about a given result, as, for example,

in the provision of a midday meal at school, the parent may quite conceivably best exercise his responsibility by supporting and encouraging such a system.

Indeed, what seems required is that the parent along with the State should develop a much more high sense of responsibility towards the child and to realize not only how much he can himself do, but also what a very great deal he cannot do. This sense of responsibility cannot possibly be awakened to the degree that it should be in the case of, perhaps, the majority of parents to-day; their own education and outlook has not been, and is not, sufficiently broad.

How far parental responsibility, and that in many cases, though not necessarily always, it is true, of the deepest kind, may take the form of delegating the training of the child in almost all particulars to others in contrast to the parent being actively engaged in doing the work himself, is well seen in the case of the numerous parents who send their children away to a boarding school for nine months out of the twelve. This fact alone shows how necessary it is to exercise a due sense of proportion when asserting that this course of action or the other will necessarily lead to loss of a sense of parental responsibility.

There cannot, however, be the least doubt that one of the most important of the educational problems to-day is how best to connect up the Home with the School. At present the union between the two exists to a very inadequate degree. The mother not infrequently sends the child to a school the inside of which she may have never herself seen, and in the work of which she takes practically no interest whatever. The sole connection between herself and the school may be represented by a visit of the school attendance officer should the child happen to be absent from school, and such a visit is

usually not calculated to cement the union. The School Authority, in its turn, has up till recently, at any rate, taken the child just as it presents itself, has admitted no responsibility other than that of "instructing" it in certain intellectual accomplishments, and has concerned itself to the most limited extent with the conditions under which the child spends four-fifths of its life.

It is imperative that this relationship should be altered, and it has become more especially imperative during the last few years, during which the community has been awakening to the fact that the child has been deprived of some of the most elementary advantages which it is its inalienable right to enjoy. The child in the past has suffered, as we have seen, from insufficient and improper food, from want of cleanliness, from insufficient and ragged clothing, from lack of attention to easily curable defects and diseases, and in numerous other directions. The nation is fast becoming convinced that, not only for the sake of the child, but in its own defence, such a condition of things must last no longer.

With social conditions such as they are, no ideal solution of the problem can possibly be found. However active reformers may be in their endeavour to secure, for example, an adequate means of livelihood and the adequate housing of all the people, the child has to be dealt with *under existing conditions*. The difficulties cannot be solved by taking up any doctrinaire attitude, but the facts of the case require to be clearly faced and the best course taken, admittedly only a poor one perhaps, which the circumstances will allow.

Since, then, in so many cases, so much requires to be done for the child, so much that at the present moment at any rate must be done by the State, if it is to be done at all, it makes it all the more imperative that the parent should be encouraged to do all which lies in his

power, and which he may be omitting to do through carelessness or ignorance, and secondly that he should be led to appreciate the spirit in which the State is supplementing his endeavours. He should be helped to understand that the State is desirous only of assisting him in his unequal struggle ; the feeling of *co-operation* between the State and the individual must be made the predominant thought. It is this thought which, in the desire that at all costs the child should be insured those elementary advantages which are its very birthright, is apt to be lost sight of. How, then, is this co-operation between the State and the individual to be furthered ?

Speaking in broad terms this can only be brought about by the establishment of a new relationship between the home and the school. Machinery for such a relationship has for long been in existence, but it has been ineffectual in its working. Managers have been attached to many schools, to all the Not-Provided and to many of the Provided, but they have been chiefly concerned with the administration of the school and, for the most part, have interested themselves but little in the individual child. Even where they have endeavoured to act in this way in some of the schools in the poorest districts, their efforts have been somewhat spasmodic, and lacking in continuity and persistency of purpose. What, however, has been chiefly lacking has been any sort of effective connecting link between the work of such managers in this direction and that of the Local Authority ; they have worked each in their own spheres, the one indeed not infrequently somewhat suspicious of the other.

What in the first place, then, to-day is demanded is that the State, as represented by the Local Education Authority, should recognize that to itself belongs the responsibility of seeing that this intimate connection is established between the school and the home. Indeed,

its responsibility in this direction should be not one whit less clear than that which it recognizes in connection with the actual instruction of the child in school. The machinery should be devised by the Local Authority, and those upon whom the work actually devolves must regard themselves, whether paid or unpaid, as in reality servants of the State.

What, then, should be the nature of the machinery? Under the general principle laid down above there is room clearly for much elasticity in method. This will apply especially to the proportion of the work which is carried out by officials and voluntary workers respectively. These two classes of workers, often to the detriment of each, so widely separated, must learn to work hand in hand. The official will need to be of a somewhat different type, and indeed, as it is becoming clear that new duties are required of him, or rather that a new spirit is required to be put into the old duties, he is showing himself capable of adapting himself to such requirements. Similarly, the voluntary worker is learning that his irresponsible methods, his privilege of doing just what he chooses and in what manner he chooses, must give place to a willingness to work within the framework laid down. There will still be abundant scope for individual initiation and expression. There is likely to be a considerable difference of opinion in different localities as to how much of the work of encouraging parents to exercise their responsibilities should be done by paid officers, *i.e.* through school attendance officers, lady health visitors, school nurses, etc., and how much by voluntary workers; it is not, however, of such paramount importance as to who does the work as to the *spirit* in which the work is done.

The concrete form which this desire of linking-up the school and the home is taking, seems proceeding in the

direction of the establishment of Children's Care Committees attached to individual schools or groups of schools and linked up centrally, all under the aegis of the Local Education Authority.* Their success and utility will be in proportion as they form an organic part of the whole school management, and as the members of them recognize that they are citizens giving a helping hand to other citizens. This, as an ideal for the voluntary worker, is taking root also in other directions, and is particularly well seen in the organization known as the Guild of Help, which is springing up in different localities throughout the country. Full advantage should be taken of any such organization, so that all overlapping of voluntary work may be avoided, for it must be remembered that similar voluntary help is needed by committees other than the Local Education Authority, especially, for example, by the Health Committee. Such an organization as the Guild of Help is well suited in its constitution to form the centre for the voluntary helpers of the town or rural area, as the case may be, to supply, that is to say, voluntary helpers to act within the State or Municipal framework.

Reviewing then as a whole the many problems connected with the hygiene of school life, and which we have endeavoured to place before the reader in the preceding chapters, we find, as insisted upon in the first chapter, how broad must be our conception of School Hygiene. It is the child upon whom we must fasten, and the problems which gather so thickly around him, whether in the home or in the school, are inextricably intervoven the one within the other.

* See "Children's Care Committees," Margaret Frere. (London: P. S. King & Co., 1909.)

APPENDIX I

Acts of Parliament dealing with Education *

Elementary Education Act, 1870.
Elementary Education Act, 1873.
Elementary Education Act, 1876.
Elementary Education Act, 1880.
Welsh Intermediate Education Act, 1889.
Education Code (1890) Act, 1890.
Local Taxation (Customs and Excise) Act, 1890.
Elementary Education Act, 1891.
Elementary Education (Blind and Deaf Children) Act, 1893
Elementary Education (School Attendance) Act, 1893.
Voluntary Schools Act, 1897.
School Board Conference Act, 1897.
Elementary School Teachers (Superannuation) Act, 1898.
Elementary Education (School Attendance) Act (1893) Amendment Act, 1899.
Elementary Education (Defective and Epileptic Children) Act, 1899.
Elementary Education Amendment Act, 1903. Amending the Elementary Education (Defective and Epileptic Children) Act, 1899.

* These and all the official documents referred to in the Appendiees may be obtained from Wyman & Sons, Ltd., Fetter Lane, London, E.C., and 32, Abingdon Street, Westminster, London, S.W.; or Oliver & Boyd, Tweeddale Court, Edinburgh; or, E. Ponsonby, 116, Grafton Street, Dublin.

Board of Education Act, 1899.
Elementary Education Act, 1900.
Education Act, 1902.
Education (London) Act, 1903.
Education (Provision of Working Balances) Act, 1903.
Education (Local Authority Default) Act, 1904.
Education (Provision of Meals) Act, 1906.
Education (Administrative Provisions) Act, 1907.
Local Education Authorities (Medical Treatment) Act, 1909.

APPENDIX II

REGULATIONS, CIRCULARS, REPORTS, ETC., ISSUED BY THE BOARD OF EDUCATION, BEARING ON HYGIENE AND EDUCATION

Code of Regulations for Public Elementary Schools in England (excluding Wales and Monmouthshire), with Schedules, 1909. [Cd. 4735.]

The Building Regulations. [Cd. 3571.]

Regulations applicable to Schools for Blind, Deaf, Defective, and Epileptic Children. [Cd. 3636] (with modifying Minute of June 30, 1908 [Cd. 4165]).

Memorandum on Medical Inspection of Children in Public Elementary Schools, under Section 13 of the Education (Administrative Provisions) Act, 1907. (Circular 576.)

Circular on Details of Medical Inspection, with Specimen Schedule for Report on Child (Circular 582).

Circular on Medical Inspection, including functions of School Medical Officer, Local Education Authority's Report, etc. (Circular 596). (*Supplementary to Circulars* 576 *and* 582.)

Circular to Local Education Authorities on the Education (Provision of Meals) Act, 1906. (Circular 552.)

Memorandum on the Education (Administrative Provisions) Act, 1907, except Sections 13 and 16. (Circular 577.)

Syllabus of Physical Exercises for use in Public Elementary Schools.

Syllabus of Lessons on "Temperance" for children attending Public Elementary Schools. [Cd. 4746.]

Outline Scheme for teaching Hygiene and Temperance to the Scholars attending Public Elementary Schools.

Memorandum on Closure of and Exclusion from School.

Circular to Local Education Authorities relating to the revision of the Regulations affecting the staffing of Public Elementary Schools, and the size of Classes. (Circular 709.)

Circular on risk of fire in Public Elementary Schools, and external doors. (Circular 587 for England; or Wales, Circular 10.)

Report of the Consultative Committee upon the School Attendance of Children below the age of five. [Cd. 4259.]

Reports on Children under Five Years of Age in Public Elementary Schools by Women Inspectors of the Board of Education. [Cd. 2726.]

Report of the Consultative Committee on Attendance, compulsory or otherwise, at Continuation Schools. [Cd. 4757.]

Special Report on the Teaching of Cookery to Public Elementary School Children.

Suggestions on Rural Education, by T. S. Dymond, H.M.I., together with Specimen Courses of Nature Study, Gardening, and Rural Economy.

Special Reports. Vol. 21. [Cd. 3866.] School Excursions and Vacation Schools.

Special Reports. Vol. 22. [Cd. 4477.] Provision made for children under compulsory school age in Belgium, France, Germany, and Switzerland.

School Doctors in Germany, by W. H. Dawson. (Educational Pamphlets, No. 4.)

Special Report on School Gardens in Germany. No. 6 in Vol. 9.

APPENDIX III

Circular (582) of the Board of Education to Local Education Authorities — Schedule of Medical Inspection

Education (Administrative Provisions) Act, 1907

Section 13

Sir,

1. The accompanying Schedule has been drawn up in response to requests which the Board of Education have received for further and more definite guidance as regards the details of the work of medical inspection than was given in the Memorandum (Circular 576) which was issued by the Board on 22nd November, 1907. The Board have, indeed, been pressed by many Local Education Authorities to issue a complete set of Forms for use in carrying out the work directly or incidentally involved in the performance of these new duties. Any Forms which experience of the working of the Act may show to be necessary or desirable will be issued in due course, but for the present the Board think it expedient to leave considerable latitude, subject to the considerations hereinafter set out, in regard to the particular Forms or Schedules to be used in different cases or circumstances.

2. The chief difficulties to be considered are administrative rather than educational or scientific. There is comparatively little dispute as to the end in view, or as to the means which, from the technical standpoint of medical science and practice, should be adopted for its complete attainment.

But the existing resources of Local Education Authorities are (for practical purposes, at all events) not unlimited, the feelings and prejudices of parents have to be considered, and

a new element has to be introduced into school life and organization with the least possible disturbance and inconvenience. Moreover, in this case two departments of local public administration are brought for the first time into organic connection —those of public health and of public education.

3. The Board are fully aware of these difficulties, and in preparing their Memorandum and Regulations it was necessary for them to consider what system would best reconcile the theoretical and practical considerations, and overcome the divergence between the ultimate end and the end immediately attainable, or between the methods which are scientifically desirable and those which can be applied in existing circumstances at the initiation of the work under the Act.

4. In the accompanying Schedule the Board indicate the particulars, attention to which they regard as constituting the *minimum* of efficient medical inspection, and they consider that at least these particulars should be included in any other Schedule which the Local Education Authority may authorise for use in their Schools. It deliberately excludes many points of anthropometric or statistical interest which are worthy of attention, and which it is hoped may receive attention in suitable districts. Nor does it profess to lay down the lines of a clinical study or of a scientifically complete medical examination. It is intended to indicate the methods which, in the Board's opinion, should be followed and the particulars which should be attended to for the purpose of determining the fitness of the individual child for school life, to guide the Authority in adapting education to the peculiarities or abnormalities of the child, and to prepare the way for measures for the amelioration of defects in the child or its environment.

A more elaborate and complete form could readily be devised, but the Board's knowledge of the circumstances in which the work is to be done leads them to believe that greater elaboration would in the majority of cases defeat its own end.

5. If this Schedule is properly used, few cases of serious physical weakness or defect will escape detection. Where the ordinary inspection shows the need of further and more searching medical examination a supplementary blank form should

be used in which particular defects or diseases should be fully recorded. It may facilitate inspection if the Schedule is printed on cards (8″ by 5″ or 10″ by 6″). The Notes are included in the attached form for the convenience of the School Medical Officer, and should not be reprinted on the cards. Of course it is not necessary that negative findings on all the points mentioned in the Notes should be recorded.

It will be noticed that a space is reserved in the Schedule for "General Observations"; this may conveniently be used to record a general summary of the condition of the child, and any information which may be available as to the home environment, or other conditions affecting its health.

It is considered that the inspection of each child should not occupy on the average more than a few minutes, and that the child need only, as a rule, have its clothes loosened or be partially undressed. Time may be saved in the actual inspection by the Medical Officer if the entries in some of the spaces are filled in by the school authorities before his visit. The four columns in the Schedule are designed for the four inspections required during school life.

With regard to items 17 to 24 of the Schedule, while it is necessary that all indications of diseased or unsound conditions should be thoroughly investigated, needless medical examination of healthy children should, for obvious reasons, be avoided.

6. Where children are found to belong to that class of "defectives" for whose education special provision is or ought to be made under the Statutes relating to such children, such cases should be made the subject of a special report to the Local Education Authority.

7. *All entries of the results of inspection in each individual case must be regarded as confidential.*

I have the honour to be,
Sir,
Your obedient Servant,
ROBERT L. MORANT.

To
The Local Education Authority

SCHEDULE OF MEDICAL INSPECTION.

I.—Name_____ Date of Birth [1] _____

Address_____ School_____

II.—Personal History :

(*a*) Previous Illnesses of Child (before admission).

Measles.	Whooping Cough.	Chicken-pox.	Scarlet Fever.	Diphtheria.	Other Illnesses.[2]

(*b*) Family Medical History (if exceptional).[3]

—	I.	II.	III.	IV.
1. Date of Inspection				
2. Standard and Regularity of Attendance [4]				
3. Age of child [5]				
4. Clothing and footgear [6]				
[III.—*General Conditions.*]				
5. Height [7]				
6. Weight [8]				
7. Nutrition [9]				
8. Cleanliness and condition of skin [10]				
Head				
Body				
[IV.—*Special Conditions.*]				
9. Teeth [11]				
10. Nose and throat [12]				
Tonsils				
Adenoids				
Submax. and cervical glands				
11. External eye disease [13]				
12. Vision [14]				
R.				
L.				
13. Ear disease [15]				
14. Hearing [16]				
15. Speech [17]				
16. Mental condition [18]				
[V.—*Disease or Deformity.*] [19]				
17. Heart and circulation [20]				
18. Lungs [21]				
19. Nervous system [22]				
20. Tuberculosis [23]				
21. Rickets [24]				
22. Deformities, Spinal Disease, &c. [25]				
23. Infectious or contagious disease [26]				
24. Other disease or defect [27]				
Medical Officer's initials				

General observations.

Directions to Parent or Teacher.

[1] Date of birth to be stated exactly, date of month and year.

[2] "Other illnesses" should include any other serious disorder which must be taken into account as affecting, directly or indirectly, the health of the child in after-life, *e.g.*, rheumatism, tuberculosis, congenital syphilis, small-pox, enteric fever, meningitis, fits, mumps, etc. The effects of these if still traceable, should be recorded.

[3] State if any cases of, or deaths from, phthisis, etc., in family.

[4] Note backwardness.

[5] Age to be stated in years and months, thus, $5\frac{4}{12}$.

[6] Insufficiency, need of repair, and uncleanliness should be recorded (good, average, bad).

[7] Without boots, standing erect with feet together, and the weight thrown on heels and not on toes or outside of feet.

[8] Without boots, otherwise ordinary indoor clothes.

Height and weight may be recorded in English measures if preferred. In annual report, however, the final averages should be recorded in both English and metric measures.

[9] General nutrition as distinct from muscular development or physique as such. State whether good, normal, below normal, or bad. Under-nourishment is the point to determine. Appearance of skin and hair, expression, and redness or pallor of mucous membrane are among the indications.

[10] Cleanliness may be stated generally as clean, somewhat dirty, dirty. It must be judged for head and body separately. The skin of the body should be examined for cleanliness, vermin, etc. ; and the hair for scurf, nits, vermin, or sores. At the same time ringworm and other skin diseases should be looked for.

[11] General condition and cleanliness of temporary and permanent teeth, and amount of decay. Exceptional features, such as Hutchinsonian teeth, should be noted. Oral sepsis.

[12] The presence or absence of obstruction in the naso-pharynx is the chief point to note. Observation should include mouth-breathing ; inflammation, enlargement, or suppuration of tonsils ; probable or obvious presence of adenoids, polypi ; specific or other nasal discharge, catarrh, malformation (palate), etc.

[13] Including blepharitis, conjunctivitis, diseases of cornea and lens, muscular defects (squints, nystagmus, twitchings), etc.

[14] To be tested by Snellen's Test Types at 20 feet distance (= 6 metres). Result to be recorded in the usual way, *e.g.* normal V. $=\frac{6}{6}$. Examination of each eye (R. and L.) should, as a rule, be undertaken separately. If the V. be worse than $\frac{6}{9}$, or if there be signs of eye strain or headache, fuller examination should be made subsequently. *Omit vision testing of children under* 6 *years of age.*

[15] Including suppuration, obstruction, etc.

[16] If hearing be abnormal or such as interferes with class work, subsequent examination of each ear should be undertaken separately. *Apply tests only in general way in case of children under* 6 *years of age.*

[17] Including defects of articulation, lisping, stammering, etc.

[18] Including attention, response, signs of overstrain, etc.

The general intelligence may be recorded under the following heads:—(*a*) Bright, fair, dull, backward; (*b*) mentally defective; (*c*) imbecile. *Omit testing mental capacity of children under 6 years of age.*

[19] Under the following headings should be inserted particulars of diseased conditions actually present or signs of incipient disease. The extent of this part of the inspection will largely depend upon the findings under previous headings.

[20] Include heart sounds, position of apex beat, anæmia, etc., in case of anything abnormal or requiring modification of school conditions or exercises.

[21] Including physical and clinical signs and symptoms.

[22] Including chorea, epilepsy, paralysis, and nervous strains and disorders.

[23] Glandular, osseous, pulmonary, or other forms.

[24] State particular form, especially in younger children.

[25] Including defects and deformities of head, trunk, limbs. Spinal curvature, bone disease, deformed chest, shortened limbs, etc.

[26] Including any present infectious, parasitical or contagious disease, or any sequelæ existing. At each inspection the occurrence of any such diseases since last inspection should be noted.

[27] Any weakness, defect, or disease not included above (*e.g.* ruptures), specially unfitting child for ordinary school life or physical drill, or requiring either exemption from special branches of instruction, or particular supervision.

APPENDIX IV

EXTRACTS FROM CIRCULAR (596) OF THE BOARD OF EDUCATION TO LOCAL EDUCATION AUTHORITIES UNDER PART III. OF THE EDUCATION ACT, 1902, ON CERTAIN QUESTIONS ARISING UNDER SECTION THIRTEEN OF THE EDUCATION (ADMINISTRATIVE PROVISIONS) ACT, 1907, AND THE CODE OF REGULATIONS FOR PUBLIC ELEMENTARY SCHOOLS, 1908

SIR,

1. . . .

A.—*School Medical Officer*

2. It will be observed that the "School Medical Officer" of the Local Education Authority is for the first time recognized in the Code of 1908 as an officer having specific functions in the system of Public Elementary Education. This Officer is defined in Article 44 (*g*) as "a medical officer named by the Local Education Authority, and recognized as such by the Board." The functions specifically assigned to him (or her) by the Code are—

(i) Those of reporting on the working and effect of any arrangements made under Article 44 (*g*) for educating children at "an open-air school, school camp, or other place selected with a view to the improvement of the health and physical condition of the children."

(ii) The power of advising or approving the closure of a school under Article 45 (*b*).

(iii) The power of authorizing the exclusion of certain children from a school on specified grounds under Article 53 (*b*), which grounds will be regarded as "reasonable grounds" under Article 53 (*a*).

3. One of the objects which the Board had in view in introducing these provisions into the Code was to secure that the responsibility for dealing with certain medical questions connected with Public Elementary Schools should, as far as possible, be placed in the hands of a single officer responsible to the County Council, County Borough Council, Borough Council or Urban District Council, who are the Local Education Authority for the area in which a school is situated. The expression "School Medical Officer" is therefore substituted for the vague expression "medical authority," which was used in Article 45 (*b*) of the Code of 1907. The Board, however, also had in view the desirability of assisting Local Education Authorities to concentrate and organize, in the department of the School Medical Officer, all matters of school hygiene, including medical inspection under the Act of 1907, and they assume that the School Medical Officer will, in addition to performing the specific functions assigned to him by the Code, also be made responsible by the Local Education Authority for supervising and controlling the general work of medical inspection.

C.—*Annual Report*

5. The Annual Report referred to in paragraph 13 (*d*) to (*h*) of Circular 576 should be made by the School Medical Officer to the Local Education Authority. . . .

6. As regards the scope of the Report, however, the Board consider that it is desirable that it should deal with the whole subject of School Hygiene, and should cover as much as possible of the ground indicated under the following heads. It is recognized that these heads suggest a degree of comprehensiveness which in many, and indeed in most cases, will not immediately be attainable. The Board have, however, considered it desirable to treat the plan of the Annual Report in such detail as to furnish Local Education Authorities with a standard, by reference to which they may regulate their arrangements for collecting and digesting the information which the work of the next few years will place at their disposal.

(*a*) General review of the hygienic conditions prevalent in the Schools in the area of the Local Education Authority in

respect of such matters as surroundings, ventilation, lighting, warming, equipment, and sanitation, including observations on the type and conditions of sanitary conveniences and lavatories, water supply for washing and drinking purposes, the cleanliness of schoolrooms and cloakrooms, arrangements for drying children's cloaks and boots, and the relation of the general arrangements of the School to the health of the children.

(*b*) General description of the arrangements which have been made for the co-relation of the School Medical Service with the Public Health Service and for the organization and supervision of medical inspection, and an account of the methods of inspection adopted, including—

(i) A statement of the extent (if any) to which the Board's Schedule of Medical Inspection has not been followed and the reasons for such departure ;

(ii) A statement showing the assistance given to the School Medical Officer and his assistants by nurses, managers of schools, teachers, attendance officers or other persons ;

(iii) A statement showing the methods adopted for securing the presence of parents at the inspection and their co-operation in the subsequent treatment of defects, together with a review of the effect of such methods ;

(iv) The extent to which disturbance of school arrangements was involved by the inspection. (Art. 43 (*b*) and 44 (*h*) of Code of 1908.)

(*c*) General statement of the extent and scope of the medical inspection carried out during the year, including—

(i) The number of visits paid to Schools and Departments ;

(ii) The principle on which children have been selected for inspection (at entrance, before leaving, by selection according to ages or otherwise) ;

(iii) The number of children inspected (classified for age at date of inspection and for sex) ;

(iv) The number of children referred for subsequent or further examination ;

(v) The number of children in respect of whom directions were given for treatment of defects, including a classified statement of such defects;

(vi) The average time per head occupied by inspection.

(*d*) General review of the facts disclosed by medical inspection, under the headings contained in the Schedule to Circular 582, including tables showing the height and weight of children inspected (according to age at date of inspection and sex).

(*e*) General review of the relation of home circumstances and social and industrial conditions to the health and physical condition of the children inspected, so far as facts bearing on this point have come under notice.

(*f*) Review of the methods employed or available for the treatment of defects, such as defective eyesight, carious teeth, nasal obstruction or adenoids, tonsilitis, discharging ears, pediculosis, ringworm, and other skin diseases, including an account of the action of School nurses in obtaining or assisting in the treatment of such defects.

(*g*) Review of action taken to detect and prevent the spread of infectious diseases, including reference to action taken under Articles 45 (*b*), 53 (*b*) and 57 of the Code of 1908.

(*h*) Review of the methods adopted and the adequacy of such methods for dealing with blind, deaf, mentally or physically defective and epileptic children under the Acts of 1893 and 1899

(*i*) Review of—

(i) The methods and results of instruction in personal hygiene and temperance in the Public Elementary Schools in the area;

(ii) The methods and results of physical or breathing exercises in the Schools;

(iii) Arrangements for open-air schools, school camps, etc., under Article 44 (*g*) of the Code of 1908.

(*j*) Account of miscellaneous work, such as the examination of Scholarship candidates, pupil teachers, or teachers of any grade.

Two complete sets of any forms used by the Local Education Authority in connection with the School Medical Service should be sent to the Board together with the Report.

D.—*Arrangements for Attending to the Health and Physical Condition of School Children*

7. . . .

(a) *Improvement of the School Arrangements.*—The School Medical Officer will doubtless furnish the Local Education Authority with valuable advice as to improvements which can be made in the use of old school premises and in the design of new school premises for improving the health of the children educated in them. For instance, he will note and report to the Authority cases in which the ventilation of schools is defective, either as regards the means provided or as regards the use and maintenance of those means, and, if necessary, he will supply them with the results of scientific tests. He will, of course, call attention to the physical effects of bad ventilation, such as the prevalence of headaches, lassitude, and debility among the scholars, when they come under his notice. He will observe and report instances of bad positions in sitting and unsuitable design of desks or benches. As regards cases of defective eyesight, he will indicate such measures as can be taken to remedy or mitigate the defects by altering the position of the children in the class, or improving the lighting of the school in amount or direction, and he will call attention to the strain imposed on eyesight by the use of too small type in text books, the teaching of very fine sewing, etc. He will also be able to estimate the effectiveness of lessons on the subject of personal hygiene given in the school, and may be able to suggest improvements in the curriculum or in the methods of giving such lessons and bringing their importance home to the children. He may also be able to institute comparisons between school and school in respect of the effect of physical exercises, and, in the case of children of weakly physique, he may be able to indicate the kind and amount of physical exercises which are suitable for them. He will observe the effect of holding classes in the open air, and call attention to cases in which the adoption of this arrangement is desirable. He will also be able to suggest to what extent and in respect of what children advantage should be taken of the facilities

afforded by Article 44 (*g*) of the Code of 1908 for improving the health and physical condition of the children, by means of open-air schools, school camps, etc., and, in cases where facilities exist for baths and swimming, he will sometimes find occasion to recommend a more extensive use of such facilities. And the beneficial influence of the School Medical Officer will not be exhausted even when he has done everything included in this formidable catalogue. The mere fact that the services of a specially skilled officer and staff are devoted by the Local Education Authority to the oversight of all matters affecting the health of the children in their Public Elementary Schools gives to the whole question of school hygiene a dignity and importance which cannot but produce a considerable effect on the minds of teachers, parents and children alike. From this point of view the School Medical Officer should be not merely a functionary charged with specific duties, but a pervading influence making, in the long run, for better hygienic conditions in the school and in the home.

(b) *Exercise of Powers under Special Acts relating to School Children.*—Medical inspection will probably indicate the necessity of having recourse to the Blind and Deaf Children Act, 1893, and the Defective and Epileptic Children Act, 1899, in the case of a considerable number of children who are at present educated in ordinary Public Elementary Schools. It will emphasize the desirability of taking advantage of the wide scope of the last-mentioned Act by establishing or contributing to the establishment of special schools or classes for physically, as distinguished from mentally defective children. It will also furnish the Local Education Authority with valuable information as to the necessity of exercising their powers under the Education (Provision of Meals) Act, 1906, and as to the best methods and effects of such exercise. It is extremely desirable that the School Medical Officer should be closely associated with this last-mentioned work wherever it is undertaken, though it is of hardly less importance that the methods adopted should be such as will secure the greatest educational effect in respect of the manners and conduct of the children concerned as well as the best physical results.

(c) *Co-operation with the Sanitary Authority.*—Although the Act of 1907 has to some extent the effect of conferring on a Local Education Authority powers concurrent with those which it exercises as Sanitary Authority (or which in the case of a county are exercised by the authorities of the local sanitary areas in the county), it is extremely important that full use should be made of the powers exercisable in the latter capacity, and it is hoped that the special powers of medical inspection conferred on the Education Authority may have the result of greatly extending the influence and scope of the work hitherto performed solely by the Sanitary Authority. In such matters as the cleansing of persons, disinfection of school premises and homes, the provision and use of public baths, the enforcement of sanitary conditions in the home, or the detection or diagnosis of a prevalent disease in cases of emergency, it is expected that the Education Authority will take every opportunity of giving information to the Sanitary Authority and of invoking its assistance, whether under the general law, such as the Public Health Acts (including the Public Health Acts Amendment Act, 1907), or under special Acts, where applicable, such as the London County Council (General Powers) Act, 1907, or the Liverpool Corporation (General Powers) Act, 1908. It is, for instance, obvious, as regards infectious diseases, that a School Medical Officer who is occupied in carrying out a programme of systematic medical inspection in the schools of the area will often be unable to dislocate his programme in order to deal personally with an outbreak of infectious disease in a particular school. He must so organize his machinery that both he and the Sanitary Authority shall receive immediate information of any such occurrence (whether the disease is "notifiable" or not) by duplicate notices or otherwise, so that the matter may be dealt with effectively and without confusion at the earliest possible moment. Definite regulations should be made for this purpose.* Where the School Medical Officer

* In this connection attention is called to the Memorandum issued in January, 1908, by the Local Government Board "on the Circumstances under which the Closing of Public Elementary Schools or the Exclusion therefrom of particular Children may be required in order to prevent the spread of Disease." The subsequent issue of the Code for 1908 has

is himself the Medical Officer of Health of a Sanitary Area no difficulty will arise, but where this is not the case it must be remembered that the ultimate responsibility for preventing the spread of infectious disease must remain with the Sanitary Authority, which is at present the sole repository of compulsory powers for closure of Public Elementary Schools of all kinds, or for exclusion of individual children from them.

(d) *Advice or Direction to Parents.*—Where medical inspection reveals any defect or malady in a particular child, the first step will naturally be to notify the parents, and, unless the ailment is a minor one which can be removed by home treatment or treatment (under the direction of the School Medical Officer) by the School Nurse, to urge upon the parent the desirability of obtaining treatment by an ordinary medical practitioner. In extreme cases of insanitary homes or conditions, the attention of the Sanitary Authority will, of course, be called to the matter.

(e) *The School Nurse.*—A School Nurse is capable of performing very useful and important functions, both in assisting in the work of medical inspection, and (under medical instructions) in applying, or showing the parents how to apply, remedies for minor ailments. Such matters as the antiseptic treatment of discharging ears, the treatment of sores and minor skin diseases, or minor diseases of the eye, such as blepharitis and conjunctivitis, the treatment of slight injuries resulting from accident, will fall within the scope of the work of the School Nurse. So far as the School Nurse can be regarded as assisting in the work of medical inspection, the sanction of the Board to her employment is not required. So far, however, as she is engaged in treating the minor ailments, or in visiting the children's homes for purposes of advice, her employment would require sanction as an "arrangement" for attending to the health and physical condition of the children. The Board would usually have no difficulty in sanctioning any well-considered scheme for this purpose.

rendered that Memorandum inapplicable in certain details, but its main principles remain unaffected, and close co-operation between the Education and Sanitary Authorities will obviate any risk of administrative confusion or conflict.

(f) *Provision of Spectacles, etc.*—In cases where medical inspection shows that the provision of spectacles is necessary for the treatment of defective eyesight, the Board will be prepared to consider proposals from a Local Education Authority to provide suitable and inexpensive spectacles free of charge. They will, however, only sanction such an "arrangement" if they are satisfied that every endeavour will first be made to obtain the provision of the spectacles by the child's parents or by any voluntary associations which exist for the purpose. The Board will, of course, require that due precautions should be taken to secure accurate examination and appropriate prescription by qualified medical men of suitable experience.

(g) *Contributions to Hospitals, Infirmaries, Dispensaries, etc.*—Special attention should be paid to the powers referred to in the proviso to section 13 (1) of the Act, and the Board consider that, before the direct treatment of ailments is undertaken by the Local Education Authority, whether by means of a School Clinic or by themselves supplying and paying for medical treatment, full advantage should be taken of the benefits of such institutions. The Board will be prepared to entertain proposals for contributing to the funds of hospitals, dispensaries, and nursing associations, on terms of adequate advantage. Such contributions are specially desirable in the case of Eye Hospitals and Cottage Hospitals which are prepared to undertake minor surgical operations. It is permissible to include among the conditions of contribution a provision allocating a reasonable remuneration to the medical men working for such institutions. Among the associations to which contributions might properly be made are "children's care associations," who, by means of local sub-committees or local representatives, arrange for the individual treatment of poor school children by voluntary agencies or otherwise.

(h) *School Clinics.*—School Clinics may serve two purposes. They may be used for further and more scientific *examination* of cases in which medical inspection has indicated the existence of defects in a child which cannot conveniently be investigated on the premises of an ordinary Public Elementary School. For instance, the School Medical Officer may discover at his first

inspection that a child is affected in respect of one or more of the particulars numbered 17 to 24 on the Schedule accompanying Circular 582, and it may be necessary for him to ascertain by further examination whether the child is fit to continue in attendance at a Public Elementary School, or whether any special precautions should be taken in the case of such a child if he continues to attend, or whether special provision should be made for his education in some other manner. Similarly, in the case of ocular defects, the detailed examination of the child may often be more expeditiously and thoroughly carried out at a School Clinic, where special appliances are available. So far as a School Clinic is used for such purposes, its establishment appears to fall within the scope of provision for medical inspection, but such a clinic should not be used merely for the purpose of enabling the ordinary inspection of school children to be carried out elsewhere than at the schools which they attend, nor, in ordinary circumstances, will the Board be prepared to approve, for the purposes of Article 44 (*h*) of the Code, attendance at a School Clinic as an inspection centre.

The establishment of School Clinics for purposes of *treatment* of defects revealed by inspection gives rise, on the other hand, to questions of considerable difficulty, and, before sanctioning the establishment of a School Clinic as an "arrangement" under section 13 (1) (*b*) of the Act, the Board will require to be furnished with detailed information as to the methods and scope of the work which it is proposed to do. They will, in particular, require to be informed—

(i) what precautions the Local Education Authority will take to secure that only those children shall be treated in a School Clinic for whose treatment adequate provision cannot otherwise be made, whether by the parents or by voluntary associations or institutions, such as hospitals, or through the agency of the Poor Law;

(ii) what precise diseases and defects will be treated;

(iii) by whom and on what terms and conditions the treatment will be carried out and what will be its extent;

(iv) what is the estimated cost of the clinic in respect of buildings and equipment, maintenance and administration, and treatment, and how it is proposed to meet this cost, out of the rates or otherwise.

I am, Sir,
Your obedient Servant,
ROBERT L. MORANT.

17*th August*, 1908.

APPENDIX V

CIRCULAR (720) OF THE BOARD OF EDUCATION TO LOCAL EDUCATION AUTHORITIES. EDUCATION (PROVISION OF MEALS) ACT, 1906. INFORMATION AND STATISTICS RELATING TO THE FEEDING OF SCHOOL CHILDREN

SIR,

1. . . .

2. . . .

3. In Circular 595 the Board stated that in future years questions would be asked with a view to eliciting information as to the manner in which the administration of the Education (Provision of Meals) Act, 1906, had been co-ordinated with the work and adapted to the findings of Medical Inspection under Section 13 (1) (*b*) of the Education (Administrative Provisions) Act, 1907. This point is one on which the Board lay great stress and which has been referred to in paragraph (1) of the Prefatory Memorandum to the Code, 1908, as well as in paragraph 17 of Circular 576 and paragraph 7 (*b*) of Circular 596. The Schedule of Medical Inspection attached to Circular 582 also contains reference to the nutrition of children.

The Board would therefore be glad to be informed as fully as possible of any arrangements which have been made by the Authority for securing co-operation between the School Medical Officer and the Committee or Officers immediately responsible for the Provision of Meals, in respect of the recommendation or selection of children, the regulation of the dietary, etc.

4. The Board also desire, as in the previous year, to be furnished with the opinion of the Local Authority, supported by such evidence as is obtainable, on the following points :—

(*a*) the extent to which the Provision of Meals has appreciably increased the ability of children to take full advantage of the education provided for them;

(*b*) the extent to which the conduct and manners of children for whom meals have been provided have been improved by the methods and discipline employed.

This is a point on which considerable emphasis was laid in the Debates in Parliament when the Act was under consideration.

5. . . .

I am, Sir,
Your obedient Servant,
L. A. SELBY-BIGGE.

BOARD OF EDUCATION

EDUCATION (PROVISION OF MEALS) ACT, 1906

SCHEDULE (ACCOMPANYING CIRCULAR 720) SHOWING THE POINTS ON WHICH THE BOARD OF EDUCATION DESIRE INFORMATION FROM LOCAL EDUCATION AUTHORITIES.

Local Education Authority.

CANTEEN COMMITTEE

1. What is the composition of the Canteen Committee under Section 1 (*a*)?

2. State the subsidiary agencies (if any) through which the Committee act.

3. Is the Committee permanently established or intermittent?

CHILDREN

4. How were the children (i) recommended to the Canteen Committee in the first instance—

(*a*) By the parents?
(*b*) By the Teachers?
(*c*) By School Attendance Officers?
(*d*) By School Medical Officer?
(*e*) By Nurses?

(ii) selected?

5. State the total number of children who were fed—

(*a*) In the whole period under review:
(*b*) In each month of the period (distinguishing the children fed in any portion of a month covered by school holidays).
(*c*) During school holidays.

6. How many individual children received meals daily for a continuous period of—

(*a*) One month or less?
(*b*) More than one but less than two months?
(*c*) More than two but less than three months?
(*d*) More than three months?

MEALS

7. State the total number of meals provided—

(*a*) Breakfasts.

(*b*) Dinners.
(*c*) Other meals.
(*d*) Total.

8. At what places were the meals provided—
*(*a*) At Schools?
*(*b*) At Centres for groups of Schools?
*(*c*) At local restaurants?

9. Where were the meals prepared?

10. What was the dietary (give full details and menus, if necessary on separate sheets)?

11. By whom were the meals—
(*a*) Served?
(*b*) Supervised?

12. How were the meals served and what rules of behaviour were enforced? (Furnish copies of any dining-room regulations in use. *See* Circular, paragraph 4 (*b*).)

Cost

13. State the actual expenditure incurred by the L.E.A.—
(*a*) In the provision of food under Section 3 of the Act.
(*b*) Under any other section of the Act.

14. State the total gross expenditure of the Canteen Committee on—
(*a*) Premises, appliances, &c.

* State in each case at how many places.

(*b*) Cooking and clerical assistance.
(*c*) Food.

15. What is the estimated pecuniary value of the assistance given (otherwise than in money) by the Local Education Authority towards the working of the Act?

16. What is the estimated average cost of each meal (inclusive of Food, Utensils, Cooks, Clerks, &c.) and on what number of children is the estimate based?

17. What was the charge fixed under Section 2 of the Act for each meal?

18. State the number of children whose meals were wholly or partly paid for by their parents—
(*a*) In advance (including payment at the time).
(*b*) On application being made to parents.
(*c*) Under proceedings or threatened proceedings.

19. State the number of children withdrawn from feeding owing to their parents' unwillingness to pay.

20. How much of the total expenditure on Food was paid—
(*a*) Out of the rates?
(*b*) By voluntary contributions?
(*c*) By parents?

21. State the amount which a ½*d.* rate would have produced in the period under review.

GENERAL REMARKS

The replies to the questions contained in this Schedule should give as complete information as possible as to the work done under the Act of 1906 *in the year ending March* 31, 1909.

It is desirable that the replies should be accompanied by a complete set of any printed Resolutions, Reports, Forms and Instructions relating to the administration of the Act by the Local Education Authority or Canteen Committee, which may be available.

APPENDIX VI

Prefatory Memorandum to the Syllabus of Physical Exercises issued by the Board of Education for Public Elementary Schools, 1909

1. In issuing a new and revised edition of their Syllabus of Physical Exercises, the Board of Education wish to emphasize their sense of the great importance of this branch of public education. The Board have already, in their "Suggestions for the Consideration of Teachers," published in 1905, drawn attention to the effect of Physical Exercises and to the close connection which exists between it and the rest of the process of education.

2. The past three years have been marked by the statutory recognition of the interest of the State in securing the physical well-being of the children in Public Elementary Schools. The Education (Provision of Meals) Act, 1906, seeks to ensure as far as possible that no child shall be prevented by want of food from profiting by the education given in those schools. Section 13 of the Education (Administrative Provisions) Act, 1907, empowers Local Education Authorities to provide for children attending Public Elementary Schools play centres and other means of recreation, requires them to provide for the medical inspection of the children, and authorizes them to make such arrangements as may be sanctioned by the Board for attention to the children's health and general physical condition. These enactments were not intended merely to provide for the relief of immediate distress. By entrusting to Education Authorities the performance and exercise of the duties and powers referred to, Parliament declared its conviction that the true aim of education is something more than the mere training of the intelligence, and that attention to the health of the children is a matter which directly concerns those whose duty

it is to provide for their education. It is now generally recognized that the physical health of the children lies at the root of education properly conceived. The object of every system of education worthy of that name will be the concurrent development of a sound character, an active intelligence, and a healthy physique. These qualities are to a great degree mutually dependent. It is undeniable that healthy physical conditions assist the development of the moral and mental faculties, and that adverse physical conditions may vitiate the otherwise well-directed efforts of the teacher. Physical education is thus essential to a sound intellectual training, and may be said to be fundamental in its effects on the individual.

3. Proper nourishment, effective medical inspection, and hygienic surroundings will not, however, of themselves produce a sound physique. A further requirement is Physical Exercise. This may, no doubt, be promoted, especially in the case of country children, by a variety of means, but none of these is such that special Physical Exercises should be entirely dispensed with, and, in the case of children whose lives are spent in towns, these Exercises are indispensable both for the development of the body and for the correction of the defects or evil habits induced by an unhealthy physical environment. In the case of all school children, therefore, Physical Exercises should be employed, but their use should always be carefully adapted to the needs and capacities of the children; there should, in short, be a direct relation between the three factors of nutrition, general health, and physical training.

4. Having in view the results to be secured, the Board have for several years been giving their earnest attention to this subject. They have been deeply impressed both with the importance of the subject and with the serious inadequacy of the existing facilities for its proper treatment. Some progress has, indeed, been made, but much remains to be done, and the Board desire now to see more decided and general progress, guided not only by the issue of an official Syllabus and appropriate inspection, but by a more adequate equipment of the teaching staff in both the Training Colleges and the Public Elementary Schools.

5. The Board's Official Syllabus was first issued in the year 1904 in consequence of the Report of an Interdepartmental Committee appointed by the Board jointly with the Scotch Education Department. It was reprinted with slight alterations in 1905, and is now re-issued with further amendments and extensive revisions, which are based upon experience and have received the careful consideration of those qualified to speak with authority on the subject. Speaking generally, the new Syllabus, like its predecessor, is based on the Swedish system of educational gymnastics which has been adopted in several European countries, and is now the basis of physical training in the Army and Navy in this country.

6. The Exercises in this Syllabus have been selected, and arranged in appropriate progression, with a view to the promotion of the harmonious development of all parts of the body. They have been chosen as suitable for children of school age, and may be effectively carried out without the use of special apparatus. Exercises likely to prove injurious to children of weak physique have been excluded, and some of the ordinary Swedish Exercises, or combinations of movements, though well designed for average use, have been omitted or modified in order to avoid risk of straining children below the average, either in vigour or physical capacity. Such modifications account for the fact that some of the Exercises in the Syllabus have not in practice been pressed to their ultimate, or even to their usual, extent, and will thus be found to differ somewhat from those included in many of the existing Manuals.

7. Several other matters in regard to the Syllabus call for mention. The Board desire that all lessons in physical exercises in Public Elementary Schools should be *thoroughly enjoyed* by the children. Indeed, freedom of movement and a certain degree of exhilaration are essentials of all true physical education. Hence, it has been thought well not only to modify some of the usual Swedish combinations in order to make the work less exacting, but to introduce games and dancing steps into many of the lessons. If appropriately taught, many of the free movements accompanying games and dancing steps cannot but have good results, as indeed

experience has shown where such exercises have been introduced.

8. Again, care has been taken to avoid as far as practicable the use of technical terms and descriptions. On this subject it is well known that there is at present considerable divergence between the views of experts. The Board must not be taken to pronounce an opinion upon the respective merits of these views. For the purposes of this Syllabus, the predominant consideration as regards terminology must be that the exercises, movements, and commands should be described or expressed in quite simple English words, even though this may lead to the use of more words than are used when a technical term is adopted. For similar reasons, in deciding points of detail in regard to certain positions or movements, the Board have endeavoured to avoid the risk of laying such emphasis on questions of minor importance as might obscure or exclude the things which really matter.

9. The Board do not feel called upon to encourage mere conformity to gymnastic standards or the production of any particular type of gymnast, or even the popular custom of class displays by selected teams. These are no doubt good things in their place, but what the Board desire to secure is the careful and well-balanced cultivation of the physical powers of each individual child. This will be obtained not so much by demanding a mere mechanical reproduction of certain movements as by the appropriate application to the class, and even to each child, of the series of exercises set out in the Tables, which, though they call for attention and concentration of mind, have been so graded and should be so taught as to suit the age and intelligence as well as the physical requirement of the child. To ascertain how far he is securing this end, the efficient teacher, whilst teaching the Tables with discipline and precision, will watch in particular the effects of the exercises upon his pupils, submitting a child when necessary to medical examination by the School Medical Officer.

10. The Board consider it of the utmost importance that the teacher should be encouraged to consider the principles embodied in the Syllabus and to apply them to the teaching of

the children under his care. With this object in view, some general guidance has been provided in the chapters and appendices of the Syllabus as to the Theory and Practice of the subject. These have been dealt with as briefly and simply as possible, chiefly to meet the needs of those numerous teachers who have not had the advantage of special training in this subject.

11. In conclusion, the Board wish to impress upon Local Education Authorities that the development of the physique of the children under their care is a matter of national importance. They do not pretend that the mere adoption of the official Syllabus will prove an effective remedy for all the physical defects which at present afflict so many of these children, but they are convinced that the principles on which the Syllabus is based are sound, and that its general adoption and right interpretation and teaching will be fruitful in practical benefits. They therefore appeal confidently to Education Authorities to assist them loyally in the establishment of a system which will, as they believe, contribute materially towards the success of the efforts now being made to promote the moral, mental, and physical development of the children in Public Elementary Schools, and to ensure that every such child shall receive, as far as possible, a training which shall fit him or her to perform the duties of life with vigour and success.

ROBERT L. MORANT.

July, 1909.

APPENDIX VII

Syllabus of Lessons on "Temperance" for Children attending Public Elementary Schools. (Cd. 4746)

PREFATORY NOTE

1. It is hoped that in course of time such instruction on the subject of "Temperance," in its restricted sense, as is suitable to Public Elementary Schools will be given by the regular Staff as part of the teaching of the elementary rules of personal health which should be included in the curriculum of every school. Article 2 (9) of the Code for 1908 indicates that such instruction should be given wherever possible, and Hygiene (which, of course, comprehends instruction relating to alcoholic drinks) is now included as one of the regular subjects for Two-Year Students in Training Colleges (Article 15 (*a*) of the Regulations for the Training of Teachers for Elementary Schools).

2. At present, however, some schools have on their staff no teachers who have the special knowledge required for giving teaching of this kind, and in order that the scholars may receive instruction in "Temperance," the services of special peripatetic teachers have been offered by various Societies and Organizations, and have in many cases been accepted by Local Education Authorities and Managers of Schools. Such instruction has been allowed to count towards the period of secular instruction required by the Code. These extraneous teachers, however competent they may be, have not always the particular qualifications required by the Code, nor the experience of the methods of teaching suitable to scholars in Public Elementary Schools which are possessed by the regular teachers on the staff of the schools. Further, the syllabuses of

"Temperance" lectures to be given by extraneous teachers which have been submitted for the Board's approval have been very various, and in some cases have not been specially designed for the instruction of scholars in Public Elementary Schools, nor have they always been appropriate to that purpose. In these circumstances the Board have come to the conclusion that the time has come for the issue of an official Syllabus to which all instruction in "Temperance" (whether given by extraneous teachers or by teachers on the ordinary staff) should conform in general character, and, to some extent, in detail. The Board believe this course to be essential in order to provide security that the teaching given on this difficult matter shall be both accurate in its statement of facts and suitable in its manner of presentation to scholars in Public Elementary Schools.

3. The following Syllabus has accordingly been framed as a "Model" Syllabus for use by teachers in Public Elementary Schools, whether they are or are not members of the School Staff, and the Board of Education will not in ordinary circumstances be prepared to approve under Article 3 of the Code any Syllabus of instruction which departs substantially from this Model. It is suggested that at least three lessons in the subject should be given to the children each year. It is, however, desirable to arrange, so far as may be possible, that if any part of the instruction is given to children who are under 10 years of age, it should be only that which is of the broadest and most general character, and that lessons on the matter of the Third Section should only be given to children who are over 12 years of age. Where three lessons cannot be given, the teacher may be able to cover the ground in rather less detail in two lessons, and where one lesson only is given, it is preferable that the matter in Section III. of the Syllabus should be very lightly touched, the main attention being concentrated on Sections I. and II. Where the lessons are given at distant intervals, as will sometimes be the case, it is clearly desirable to begin the later lessons by a brief recapitulation of those which have preceded. There is an obvious advantage in securing that a series of three lessons is given to the children

within a comparatively short period. Lessons on this subject need not necessarily be grouped under a separate head in the curriculum, but can appropriately be included in instruction on Hygiene, of which indeed they form a part.

It will be observed that the principle of the Syllabus is to proceed, as far as possible, by means of question and answer, from what the child already knows to what it does not know. By this means the child is brought to express what it has already experienced, and is led on, by amplification and illustration, to realize what is most conducive to a healthy life. Technical terms and language which a child would not understand have been avoided as far as practicable, and it is of the highest importance that in using the Syllabus the teacher should be careful to employ only the simplest language.

4. Some notes for the guidance of teachers have been appended which elaborate the necessarily condensed statements of the Syllabus, and indicate under each heading the line which should be taken and the material which can be safely used in enforcing or illustrating the several points. It is not, of course, intended that these Notes should ever be read to the class or used in such a way as to overload the teaching with detail. It may be taken that the statements of fact made both in the Syllabus and in the Notes have been carefully verified, and that the inferences drawn from the facts are supported by scientific opinion of high authority.

5. It has been alleged that some of the "Temperance" teaching given in the past which was represented as "scientific" has, in fact, fallen short of a scientific standard as regards accuracy in stating facts, caution in drawing inferences, or methods of instruction. Indeed in some cases it appears that attempts have been made to support the incontrovertible general arguments against the abuse of stimulants by suggesting that alcohol inevitably and invariably has deleterious consequences when taken as a beverage in any conditions whatever. The supposed proof of this proposition, sometimes included in lectures on "Temperance" given in Public Elementary Schools, occupied time that might have been better employed for the purpose of inculcating "Temperance" on broad intelligible

grounds, and as a scientific argument rested on somewhat precarious foundations.

6. The teacher will know that a temperate life depends mainly on good habits and the appreciation and practice of a few simple and direct rules of health and conduct, and is therefore largely a matter of good training. There are open to the teachers on the Staff of the School frequent opportunities, apart from the regular lessons, of impressing upon the scholars the importance of habits of self-control. It should be the object of any special instruction in "Temperance," as in other departments of Hygiene, to supply in a simple intelligible form the broad truths of the subject and plain reasons for the good habits which it should be the constant aim of the School life, no less than of the Home life, to develop in the scholars.

7. "Temperance" teaching in Public Elementary Schools should therefore aim mainly at impressing upon the scholars the manifest advantages of abstemiousness, and the absence of advantage in, and the positive risks and dangers of, any departure from it. The advice or injunctions given should be based upon the broad facts of common experience, such as children can readily understand, and upon the conclusions of trained observers (*e.g.*, as to the extent to which the power to do mental and physical work is affected by the consumption of alcohol in its ordinary forms), rather than upon the results of laboratory experiments or pathological studies. The latter may be valuable in the teaching of advanced students of Hygiene, but can have little, if any, real meaning for children. The teacher should carefully avoid anything, whether in the details or in the methods of dealing with them, calculated to excite morbid curiosity or fear. Instruction on the subject of "Temperance" should itself be temperate and should make a sober appeal to such reasoning capacity as a child possesses and to the ideas of decent, self-respecting and dutiful living which every good teacher endeavours to present to and cultivate in the children under his charge.

ROBERT L. MORANT.

June 1st, 1909.

SYLLABUS

Section I

Eating and Drinking: Food and its Use

1. What things do we eat?
2. The different kinds of food.
   Meats, fats, starches, sugars, salts. Water in food.
3. What is the use of our food? Why food is necessary.
   (*a*) Food is necessary for the growth of the body.
   (*b*) Food prevents the body from becoming thin and wearing away. It repairs waste.
   (*c*) It is from food that we get our strength and power to work.
   (*d*) It is by our food that the body is kept warm.
   (*e*) The working of the mind depends upon the condition of the body. If the body is not properly fed the mind will not work so well.
4. Overfeeding and underfeeding. Too little food is bad for the body; too much food is bad also.
5. The special usefulness of the different kinds of food. Why people eat various kinds of food, and why they are wise to do so.
6. Things which people eat and drink for pleasure. Sweets, cakes, tea, coffee and cocoa. Some of these things are foods or quench thirst. The value of each. Why people drink tea and coffee.
7. Other beverages.
   Besides these beverages, which are in part useful, people also take for pleasure other beverages, such as beer, wine, spirits. These are not useful in the ways in which our ordinary food, and such things as cocoa and milk, are useful. People often do themselves great harm by taking too much beer, wine and spirits.
   The chief reason for this is that these beverages contain Alcohol and little or no real food-substance.

Children and young people ought never to take alcoholic beverages in any circumstances, unless by a doctor's express order.

Section II

Alcohol—Effects of Alcoholic Beverages on the Body

1. The presence of Alcohol in beer, wine and spirits.

   Not only are beer, wine and spirits not useful to us in the same way that our ordinary food is useful; they also contain varying proportions of alcohol, which in pure form is injurious to the human body.

2. Some characteristics and uses of pure Alcohol.

3. The proportion of Alcohol in beer, wine and spirits.

   It is impossible to drink alcohol undiluted, because of the direct injury and pain it would produce.

   The harmful effects of alcohol are weakened, though not destroyed, when it is mixed with water and other things, as in alcoholic beverages.

4. The drinking of alcoholic beverages may bring about injurious effect and changes in our bodies, which may be considered under the following headings :—

   The effect of Alcohol on :—

   (*a*) Growth.
   (*b*) The power of the body to resist disease.
   (*c*) The body's strength and power to work.
   (*d*) The proper digestion of food.
   (*e*) The heat of the body.
   (*f*) The control of the body which is exercised by the brain.
   (*g*) The intelligence and understanding.

5. The effects of excessive drinking of Alcohol :—

   (*a*) The man or woman who habitually drinks too much alcohol may become a mental or physical wreck.

   (*b*) Persons who drink in excess do not, as a rule, have long or healthy lives. The evidence of this.

Section III

EVIL CONSEQUENCES OF INTEMPERANCE TO THE INDIVIDUAL, TO THE HOME, AND TO THE STATE

(*For children over* 12 *only*)

1. The drinking of alcoholic beverages not only may have bad effects upon the body and mind of the individual, but also may be followed by still more serious consequences, namely, moral injury to himself and great harm to others.
2. The importance of self-control and temperance in all things. Freedom is lost if evil habits are acquired.
3. The personal consequences of excessive drinking of Alcohol :—
   (*a*) Waste of money which could be wisely spent or saved. The value of thrift.
   (*b*) Loss of self-respect.
   (*c*) Unfitness for work ; loss of employment. Pauperism.
   (*d*) Ill-health ; disease. Insanity.
   (*e*) Neglect of duty ; moral degradation. Crime.
   (*f*) The ruin of homes ; unhappiness and suffering of men, women, and children.
4. The social evils which result from alcoholic excess.

   The habit of alcoholic excess affects not only the individual and his family, but also the State, *i.e.* the whole of the people. There is wasteful expenditure of money ; and paupers, lunatics, and criminals are a heavy burden on the public. The working powers of the people as a whole are impaired, and so the prosperity of the nation itself is undermined.

APPENDIX VIII

Regulations for the Training of Teachers for Elementary Schools. Appendix C. 5. "Hygiene Syllabus"

The following Syllabus is intended to serve as a model for general guidance, but alternative Syllabuses may be submitted to the Board for approval, provided they are not less comprehensive than this.

The Board's Final Examination for Students in Training Colleges will include a paper in Hygiene containing questions based on this Syllabus, a certain number of alternative questions being allowed to meet the case of Colleges for which alternative Syllabuses may have been approved.

The sole object of the Syllabus is to develop in the student an intelligent appreciation of the theory and practice of Hygiene. The Course is intended to familiarize him with the general principles of Hygiene, with a view to their practical application by him, when he has become a teacher, in the educational and personal interests of the children who come under his care in the Public Elementary Schools. It is not in any way whatever meant to be a Syllabus upon which instruction is to be given to children, and no attempt must be made to use it in that way. The purpose kept in view in the Syllabus has been to give the student a good general survey of the subject as a whole. To secure this object it is necessary that a wide ground should be covered, but too much time should not be devoted to any one part of the subject. Some class work, including practical demonstrations, should also be undertaken, and full opportunity should be given for the Students to question the lecturer.

Lecture I.—Introductory

The place of man in the animal kingdom.

The cell as unit of tissues and organs of the body. Its life, growth, and reproduction (compare amœba).

Structure and function, work and rest. Division of labour.

The child a developing and immature human being. Factors influencing its development: (*a*) hereditary and antenatal conditions; (*b*) environment; (*c*) nutrition and training (particularly of brain and nervous system during plastic period of growth).

Lecture II.—The Skeleton and Muscular System

The skeleton and its development in the young. Joints. Locomotion.

Importance of attitudes and postures. Spinal curvature.

The muscular system and its relation to the nervous system.

Influence of proper and sufficient food. Effect of alcohol.

Physical exercises, drilling and games. Muscular fatigue.

Lecture III.—The Digestive System

The alimentary canal.

Process of digestion, commencing in mouth. Hygiene of mouth, teeth, etc.

Dietaries. Amount and sorts of foods for children, uses and values. Characteristics of unsound food.

Evil results of wrong feeding, underfeeding, food poisoning. Dangers of stimulants, alcohol, tea, etc.

Signs of malnutrition. Rickets.

Lecture IV.—The Respiratory and Circulating Systems

The purpose of the circulation of the blood. Blood, heart and blood vessels. Anæmia. The lymphatic system.

The lungs. Purpose and mechanism of respiration. Breathing exercises. Obstruction to breathing (adenoids, etc.).

Difference between fresh and expired air.

Relation of respiration and circulation to nervous system. The effects of exercise, malnutrition, tight clothing, alcohol, etc.

Advantages of an open-air life.

Lecture V.—The Excretory System

Waste matter—in tissues as result of work, in bowel as undigested and indigestible food.

Excretory organs and how they work, skin, kidneys, lungs, etc.

Evils resulting from delayed or irregular excretion.

Importance of personal cleanliness, regular habits, nutrition, clothing.

The care of the body.

Lecture VI.—The Nervous System

Brain, spinal cord, motor and sensory nerves.

Reflex action. Brain centres and nerve cells. The way the brain works. Co-ordination and association.

Requirements of a healthy nervous system (nourishment, regular habits, physical exercises, manual and intellectual work, periods of rest and change of occupation). Evil effects of malnutrition, defective senses, overstrain, impure air, bad habits, alcohol, etc. Causes of mental dulness, feeble-mindedness, headaches, neuralgia.

Development of child's mind and nervous system (sensory receptivity, reflex movement, imitation, attention, self-control; nourishment and education of nerve cells; development of motor centres by muscular exercise).

Physical and mental fatigue.

Lecture VII.—Sense Organs

Relation of senses to nervous system.

Their training and development.

Sense of Sight.—Structure of the eye. Eye muscles; mechanism of accommodation.

The visual centre in the brain.

Defects of vision and common eye disease.

Eye strain, particularly in young children.

Short and long sight, etc. Vision testing.

Effect on sight of bad light, long hours, small print, close work, etc., especially in childhood.

Lecture VIII.—Sense Organs (*continued*)

Hearing.—Structure of ear. The auditory centre in the brain. Causes and signs of defective hearing. Tests. Deaf-mutism.

Speech.—The structure and use of vocal organs. Voice training and defective articulation. Speech centres. Aphasia.

Sense of Smell.

Sense of Touch.—Co-ordination, temperature, feeling, muscular sense.

Lecture IX.—Sanitation of the School

Requirements of the healthy school:—

Suitability of site, soil, and construction (various types of school buildings).

Water Supply.—Collection, storage, and distribution. Various forms of pollution. Methods of prevention.

Sanitary conveniences (various types), drainage, refuse removal. Earth closets and their management.

Effects of sewer gas.

Lecture X.—Sanitation of the School (*continued*)

Ventilation — cubic capacity, amount of fresh air necessary. Impurities of atmosphere and their effects. Methods of ventilation.

Warming and lighting.

Equipment.—(Class-rooms, desks, blackboards, cloak-rooms, lavatories, etc.) The Hygiene of Infant Departments.

Cleanliness.—Class-room as an object-lesson in health.

Duties of individual in relation to health of community.

Lecture XI.—Disabilities and Diseases of Children

The relation of micro-organisms to disease. Conditions of their life. Relation of seed (bacteria) and soil (body tissues). Means of resistance.

Inherited tendencies and conditions due to environment (dirt, neglect, exposure, etc.). Predisposition to disease.

Early signs and symptoms of ill-health in children (nervous conditions, infectious diseases, parasites).

Lecture XII.—Medical Inspection of Schools, etc.

The objects and method of medical inspection of schools and school children.

Methods of detecting and dealing with physically and mentally defective children.

Direct and indirect means of cultivating good physical habits in school, and adapting education to the physical needs of the child. (Example and health of teacher, games, physical exercises, ventilation, cleanliness, absence of near-eye work.)

School closure and exclusion of children on medical grounds. First aid in minor injuries and common ailments.

Disinfection.

APPENDIX IX

Children Act, 1908. Section 122 dealing with the Cleansing of Verminous Children

(1) A Local Education Authority may direct their medical officer, or any person provided with and, if required, exhibiting the authority in writing of their medical officer, to examine in any Public Elementary School provided or maintained by the authority the person and clothing of any child attending the school, and, if on examination the medical officer, or any such authorized person as aforesaid, is of opinion that the person or clothing of any such child is infested with vermin or is in a foul or filthy condition, the Local Education Authority may give notice in writing to the parent or guardian of, or other person liable to maintain, the child, requiring him to cleanse properly the person and clothing of the child within twenty-four hours after the receipt of the notice.

(2) If the person to whom any such notice as aforesaid is given fails to comply therewith within such twenty-four hours, the medical officer, or some person provided with and, if required, exhibiting the authority in writing of the medical officer, may remove the child referred to in the notice from any such school, and may cause the person and clothing of the child to be properly cleansed in suitable premises and with suitable appliances, and may, if necessary for that purpose, without any warrant other than this section, convey to such premises and there detain the child until the cleansing is effected.

(3) Where any Sanitary Authority within the district of a Local Education Authority have provided, or are entitled to the use of, any premises or appliances for cleansing the person or clothing of persons infested with vermin, the Sanitary Authority shall, if so required by the Local Education Authority, allow the

Local Education Authority to use such premises and appliances for the purpose of this section upon such payment (if any) as may be agreed between them or, in default of agreement, settled by the Local Government Board.

(4) Where, after the person or clothing of a child has been cleansed by a Local Education Authority under this section, the parent or guardian of, or other person liable to maintain, the child allows him to get into such a condition that it is again necessary to proceed under this section, the parent, guardian, or other person shall, on summary conviction, be liable to a fine not exceeding ten shillings.

(5) Where a Local Education Authority give notice under this section to the parent or guardian of, or other person liable to maintain, a child, requiring him to cleanse the person and clothing of the child, the Authority shall also furnish him with written instructions describing the manner in which the cleansing may best be effected.

(6) The examination and cleansing of girls under this section shall only be effected by a duly qualified medical practitioner or by a woman duly authorized as herein-before provided.

(7) For the purposes of this section "medical officer" means any officer appointed for the purpose of section thirteen of the Education (Administrative Provisions) Act, 1907.

APPENDIX X

EDUCATION (PROVISION OF MEALS) ACT. FORM USED BY THE CITY OF BRADFORD EDUCATION COMMITTEE IN ORDER TO ASCERTAIN THE CIRCUMSTANCES OF THE FAMILIES OF THE CHILDREN FOR WHOM APPLICATION IS MADE FOR THE PROVISION OF MEALS

FORM NO. 2.

Case No.....
Officer's No.....

City of Bradford Education Committee.—Provision of Meals Act, 1906.

Name of Child or Children _____ School _____

Address

Name of Father, Mother, and each other Member of Family.	Age.	Occupation.	Employer.	Weekly Wages when Full-time. £ s. d.	Average Income for last Four Weeks. £ s. d.
			Total Income .		
			Deduct Rent .		
			Net Income .		

No alteration should be made in these figures; all changes must be noted in the spaces provided below.

If Father out of work, how long so? _____

If Father sick, how long so, and by whom attended? _____

If in receipt of Relief, state amount _____

Character of Parent _____

Remarks, especially as to any other sources of income or expenditure, *e.g.* Doctor's Bills, Insurance, &c. :

Date _____ _____ *Visitor.*

At the expiration of each month an entry as to change of circumstances should be made below :

Date.....	Date.....	Date.....	Date.....	Date.....
Date.....	Date.....	Date.....	Date.....	Date.....

Submitted to Committee on	RESULT.

APPENDIX XI

Actual Time-tables of Two Schools for Mentally Defective Children *

* Kindly supplied by the head teachers of the two schools respectively through Mrs. Burgwin, Superintendent of the Special Schools under the London County Council.

Days.	9.25 9.35	9.35 9.50	9.50 10.0	10.10 10.15	10.0 10.30	10.30 10.45	10.45 11.15	11.15 11.30	11.30 12.0	12.0 12.5
Mondays	Assembly, marking registers, and prayers daily	Scripture	Marching and drill	Registers closed	Reading	Recreation	Arithmetic	Recitation and singing	Writing	Grace and dismissal
Tuesdays					Arithmetic		Reading		Object lesson	
Wednesdays					Reading		Arithmetic		Writing	
Thursdays					Arithmetic		Reading		Object lesson	
Fridays					Reading		Arithmetic		Writing	

CHILDREN AND OLDER GIRLS)

1.25 1.30	1.40 1.45	Class.	1.30 2.30	2.30 2.45	2.45 3.0	3.0 3.30	3.30 3.35
Assembly, registers, and grace	Registers closed	1	Needlework (girls)	Recreation	Recitation and singing	Drawing and colour work (girls)	Prayers and dismissal
		2	Drawing (boys)			Paper-cutting and mounting	
		3	Drawing (boys)			Paper-folding (mixed)	
		4	Needlework (girls)			String-work (mixed)	
		1	Machine work and rugs (girls)			Tablet designs (girls)	
		2	Gardening (boys)			Drawing and colouring (boys)	
		3	Macramé work (mixed)			Drawing and colouring (mixed)	
		4	Clay-modelling(mixed)			Drawing and colouring (mixed)	
		1	Chair-caning and flowers (girls)			Drawing (girls only)	
		2	Strip-work (boys)			Clay-modelling (boys)	
		3	Cane-work (mixed)			Paper-cutting (mixed)	
		4	String-work (mixed)			Embroidery on cards (mixed)	
		1	Knitting (girls)			Darning (girls only)	
		2	Drawing (boys)			Colouring work of last lesson	
		3	Drawing (boys)			Brushwork (mixed)	
		4	Knitting (girls)			Drawing and colour work (mixed)	
		1	Cookery and mat-plaiting (girls)			Cookery and industrial work	
		2	Rug-making (mixed)			Varied (stories or games)	
		3	Pricking and sewing (mixed)			Varied (stories or games)	
		4	Mat-plaiting (mixed)			Varied (stories or games)	

Day.	Class.	9.20 to 9.30	9.30 to 9.50	9.50 to 10.5	10.5 to 10.55	10.55 to 11.10	11.10 to 11.30	11.30 to 12.0	1.20 to 1.30
Monday	1	Assembly, registration, and prayers	Scripture	Physical exercises	Tailoring	Recreation	Theory of subjects indicated	Practice of subjects indicated resumed	Assembly and registration
	2				Bootwork				
	3				Woodwork				
	4				Strip ironwork or Repoussé				
	5				Wood-carving				
	6				Wood-carving				
	7				Chair-caning and Basketry				
	8								
	9								
Tuesday	1				Wood-carving		Theory of subjects indicated	Practice of subjects indicated resumed	
	2				Wood-carving or Repousé				
	3				Tailoring				
	4				Bootwork				
	5				Woodwork				
	6				Woodwork				
	7				Clay-modelling and Pottery				
	8								
	Special				—		—	—	
Wednesday	1				Repoussé		Theory of subjects indicated	Practice of subjects indicated resumed	
	2				Tailoring				
	3				Bootwork				
	4				Strip woodwork				
	5				Strip woodwork				
	6				Wood-carving				
	7				Wood-carving				
	8				Strip woodwork				
	9				Strip woodwork				
	Special				—		—	—	
Thursday	1				Tailoring		Theory	Practice resumed	
	2				Bootwork		,,		
	3				Woodwork		,,	,,	
	4				Arithmetic and Composition		Reading	Recitation	
	5						,,	,,	
	6				Woodwork		Theory	Practice resumed	
	7				Woodwork		,,		
	8				Clay-modelling and Pottery		,,	,,	
	9						,,	,,	
	Special				—		—	—	
Friday	1				Bootwork		Theory of subjects indicated	Practice resumed	
	2				Woodwork				
	3				Tailoring				
	4				Wood-carving				
	5				Wood-carving				
	6				Strip ironwork				
	7				Strip ironwork				
	8				Rustic work or Varied				
	9								

* Preceded by

(FOR OLDER BOYS)

1.30 to 2.0	2.0 to 2.25	2.25 to 2.40	2.40 to 3.10	3.10 to 3.30	
Bootwork Woodwork Tailoring Mental arithmetic	Writing ,,		Bootwork * Woodwork * Tailoring * Reading	Singing ,,	
,,	,,		,,	,,	
,,	,,		,,	,,	
,,	,,		,,	,,	
,,	,,		,,	,,	
Arithmetic on paper ,,	Composition on paper ,,		Reading ,,	Object lesson ,,	
Bootwork Tailoring Arithmetic on paper	Composition on paper		Bootwork * Tailoring * Reading	Object lesson	
,,	,,		,,	,,	
,,	,,		,,	,,	
Woodwork			Woodwork *		
Mental arithmetic ,,	Oral composition ,,		Reading ,,	Recitation of words of songs	
Tailoring Woodwork Mental arithmetic	Oral composition		Tailoring * Woodwork * Reading	Recitation as above	
,,	,,		,,	,,	
,,	,,		,,	,,	
Bootwork			Bootwork		
Mental arithmetic ,,	Transcription or composition		Reading ,,	Singing ,,	
Woodwork Bootwork Mental arithmetic	Transcription or composition		Woodwork * Bootwork * Reading	Singing	
,,			,,	,,	
,,	,,		,,	,,	
Tailoring			Tailoring *		
Wood-carving and woodwork Tailoring Bootwork Mental arithmetic	Transcription of piece read first		Woodwork Tailoring Bootwork Organized games		
,,			,,		
,,	,,		,,		
Organized games ,,			Reading ,,	Transcription ,,	

Recreation

Prayers and dismissal

20 mins. theory.

In the following table the time (in minutes) spent upon each subject per week is shown.

Classes.	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.
Manual.									
1. Woodwork . .	115	220	230	105	105	200	200	—	—
2. Wood-carving .	105	57½	57½	100	100	200	200	—	—
3. Tailoring . .	230	220	220	220	105	—	—	—	—
4. Bootwork . .	220	230	220	105	220	—	—	—	—
5. Strip wood . .	—	—	—	100	100	—	—	100	100
6. Chair-caning and basketry .	—	—	—	—	—	—	—	100	100
7. Clay-modelling and pottery .	—	—	—	—	—	—	—	200	200
8. Strip iron . .	—	—	—	50	50	100	100	—	—
9. Repoussé . .	115	57½	57½	50	50	—	—	—	—
10. Rustic . .	—	—	—	—	—	—	—	100	100
Mental.									
1. Arithmetic . .	90	90	90	85	85	150	150	120	120
2. Reading . .	90	90	90	60	60	120	120	150	150
3. Writing and Composition .	75	75	75	75	75	125	125	120	120
4. Object-lesson .	20	20	20	—	—	20	20	20	20
5. Recitation . .	20	20	20	20	20	20	20	20	20
6. Singing . .	20	20	20	20	20	40	40	40	40
7. Org. games .	—	—	—	50	50	50	50	55	55
8. Phys. exercises .	—	—	—	60	60	75	75	75	75
9. Scripture . .	100	100	100	100	100	100	100	100	100
10. Recreation . .	150	150	150	150	150	150	150	150	150
Total .	1350 minutes = 22½ hours								

The following points should be noted in connection with the foregoing time-table for older boys :—

1. Three special instructors attend the school for woodwork and carving, bootwork, and tailoring respectively.

2. An opportunity is given to each boy to show what aptitude (if any) he has for any or all of the manual subjects.

3. The special class indicated is composed of picked boys, who are instructed in the subjects indicated with a view to a future livelihood.

4. Since the boys derive greater benefit from the manual than from the mental work, the former is taken in the morning when the boys are freshest.

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