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Report of The Consultative Committee on THE PRIMARY SCHOOL

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NOTE.

The estimated gross cost of the preparation of the appended Report (including the expenses of the Witnesses and Members of the Committee) is £1,553 13*s.* 11*d.*, of which £400 represents the gross cost of printing and publishing this Report.

NOTE ON THE NOMENCLATURE USED IN THE REPORT.

In this Report, as in our Report on the Education of the Adolescent (1926), we use "Primary" for education up to the age of eleven, and "Secondary" for education from the age of eleven till the end of school life. For the sake of convenience, "Primary School" is used both for a school taking children from five to eleven and also for a school from which children under seven are excluded as being otherwise provided for. In certain passages in the body of the Report we have for the sake of clearness used the phrase "Junior School" in contradistinction to "Infant School" to describe self-contained schools for children between the ages of seven and eleven, i.e. the upper stage of primary education. Further, throughout this Report we use the expression "Grammar School" as meaning a "Secondary School" recognised under the Board's Regulations for Secondary Schools, and the expression "Modern School" as meaning either a "Selective" or "Non-Selective Central School" (see Section 101 (pp. 99-100) of Chapter III. and Appendix II., pp. 265-268, 269, and 273-274 of our Report on the Education of the Adolescent), or a so-called "Senior School".

NAMES OF THE MEMBERS OF THE CONSULTATIVE COMMITTEE.

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Mr. R. F. YOUNG (*Secretary.*)

The late Sir Graham Balfour was also a member of the Consultative Committee.

TERMS OF REFERENCE.

To inquire and report as to the courses of study suitable for children (other than children in Infants' Departments) up to the age of 11 in Elementary Schools, with special reference to the needs of children in rural areas.

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PREFACE.

The following question was referred to us by the Board of Education :—" To inquire and report as to the courses of study suitable for children (other than children in Infants' Departments) up to the age of 11 in Elementary Schools with special reference to the needs of children in rural areas."

We began our consideration of this problem in November, 1928, immediately after we had completed our *Report on Books in Public Elementary Schools*. The full Committee has sat on 35 days between November, 1928, and November, 1930, and has examined 89 witnesses (*see* Appendix I.A.). In July, 1929, the Committee appointed a Drafting Sub-Committee consisting of six of its members, with Mr. W. A. Brockington as Chairman, and with power, subject to the approval of the President of the Board of Education, to co-opt members from outside.[1] In this way, it was fortunate enough to secure the services of Professor Cyril Burt, Mr. R. F. Cholmeley, and Professor Sir Percy Nunn, who placed at its disposal their wide knowledge and sound judgment, and who have rendered invaluable help in the preparation of the Report. The Drafting Sub-Committee met on 32 occasions between September, 1929, and November, 1930.

We take this opportunity of thanking our witnesses for the valuable evidence which they put before us, and also all those other organisations and persons (whose names will be found in Appendix I.B.) who were good enough to furnish us with memoranda, specimen syllabuses of work, statistics and other data bearing on our inquiry. We desire to thank Professor H. A. Harris and Professor Cyril Burt, who furnished us with valuable memoranda on the physical and mental development of children between the ages of seven and eleven, which we have printed as Appendices II. and III., respectively, to this Report. We also desire to thank Mr. C. Birchenough, Chief Inspector under the Kent Education Committee, to whom we are indebted for help given in the preparation of Chapter I.

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[1] Under Clause 5 (iii) of the Order in Council of 22 July, 1920, reconstituting the Consultative Committee.

In particular, we would express our sincere gratitude to the Secretary to the Committee, Mr. R. F. Young, and to the Clerk of the Committee, Mr. R. J. Telling, whose continual and devoted services have once more placed us under a deep obligation. Mr. Young's work in the preparation of the Historical Chapter has been especially valuable.

We cannot end without recording our sense of the loss which the Committee has sustained by the death of Sir Graham Balfour in October, 1929. He had been a member since 1926 : he had taken a leading part in the preparation of our *Report on Books in Public Elementary Schools*, and he took the keenest interest in the progress of our present inquiry. He had won the affection as well as the respect of his fellow-members, and he contributed generously both to their deliberations and to the shaping of their conclusions.

INTRODUCTION.

The subject referred to us was the curriculum for children between seven and eleven years of age in elementary schools, with special reference to the needs of children in rural areas. The boys and girls concerned have left the infant school; in a few years they will be entering one type or another of secondary school. In the meantime, to the number of approximately 2,500,000, they are attending for a period of four years, almost one half the whole period of compulsory education, the educational institution appropriate to children of their age, which is most conveniently described as the primary school.(1) It is the problems presented by the primary school that are the theme of this report.

The problems are numerous and urgent. A school is at once a physical environment, a training-ground of the mind, and a spiritual society. Are we satisfied that in each of these respects the primary schools of to-day are all that, with the knowledge and resources at our command, we have the power to make them? Are their buildings and physical surroundings as conducive to health and vitality as may reasonably be demanded? Is their curriculum humane and realistic, unencumbered by the dead wood of a formal tradition, quickened by inquiry and experiment, and inspired, not by an attachment to conventional orthodoxies, but by a vivid appreciation of the needs and possibilities of the children themselves? Are their methods of organisation and the character of their equipment, the scale on which they are staffed, and the lines on which their education is planned, of a kind best calculated to encourage individual work and persistent practical activity among pupils, initiative and originality among teachers, and to foster in both the spirit which leaves the beaten path and strikes fearlessly into new fields, which is the soul of education? What are the deficiencies, if any, which most hamper their work, and by what measures may it be hoped such deficiencies will be removed? Like other parts of the educational system, the education of children between seven and eleven is in a state of more than ordinarily rapid growth. What is true to-day will be irrelevant to-morrow, and to attempt a summary answer to these questions would be unprofitable. We discuss

(1) See the Note on page iii relating to the nomenclature used in this Report.

some of them in greater detail in the body of our report. It may be serviceable, however, to emphasise at this stage certain of the larger issues which call for consideration, and to indicate briefly the most fundamental of the conditions on which, as we believe, the further progress of primary education will depend.

The first condition is that the special function of the primary school should be clearly conceived, and that the vital importance of that function should be recognised as it deserves. It should be easier to recognise it to-day than in the past, for the effect of the reorganisation of the later stage of education, which is now taking place, is to throw into sharper relief the significance of the earlier. In our *Report on the Education of the Adolescent* (1926) we urged that the time had now come when the system of public education should be regraded, and that, with a view to bringing names into closer accordance with facts, the older terminology, inherited from the quite different conditions of the nineteenth century, which described all public education up to and even beyond the age of fourteen as elementary, should be replaced by a simple and intelligible classification of schools into primary and secondary. We have had evidence, we are glad to say, that the introduction of a break at eleven, which will shortly be general, is of benefit not only to the children over eleven, with whom in that inquiry we were principally concerned, but also to those between seven and eleven, whose education is the subject of our present report. Its corollary is a heightened definiteness and precision in the interpretation, not only of secondary, but of primary education.

Such a clarification of the purpose of the primary school is the necessary pre-requisite of an improvement in its quality. It becomes possible to concentrate attention on the task of making provision for a relatively homogeneous group. If the successful development of secondary education depends on treating the years after eleven as a definite phase in child-life, with distinctive educational requirements and with problems of its own, the necessity for a similar realisation of the special province and role of primary education is not less imperative. The primary school is not a mere interlude between the infant school and the later stages of education, nor is its quality to be judged by its success in preparing children to proceed to the latter. It is continuous with both, because life is continuous, and it must be careful, accordingly,

to preserve close contact with both. But just as each phase of life has its special characteristics, so the primary school has its special opportunities, problems, and difficulties; and these it must encounter by developing its own methods, perfecting its own technique and establishing more firmly its own standards of achievement and excellence. Its criterion must above all be the requirements of its pupils during the years when they are in its charge, not the exigencies of examinations or the demands of the schools and occupations which they will eventually enter. It will best serve their future by a single-minded devotion to their needs in the present, and the question which most concerns it is not what children should be—a point on which unanimity has hardly yet, perhaps, been reached—but what, in actual fact, children are. Its primary aim must be to aid children, while they are children, to be healthy and, so far as is possible, happy children, vigorous in body and lively in mind, in order that later, as with widening experience they grow towards maturity, the knowledge which life demands may more easily be mastered and the necessary accomplishments more readily acquired.

If the central consideration, by which the curricula and methods of the primary school must be determined, is the sum of the needs and possibilities of the pupils attending it, it is obviously from those who have specialised knowledge of physical and mental conditions that, in the first place at least, guidance must be sought. So far as urban areas are concerned, the ordinary arrangement is for children to pass from the infant to the primary school between seven and eight, and we think that in these areas, where alone the arrangement is practicable, the existence of such separate schools or departments is clearly advantageous. When the reorganisation now in process of being carried out becomes universal, they will remain in the primary schools till the age of eleven. It is therefore the physical and mental characteristics of the four years between seven and eleven which require to be considered.

The conclusions of leading authorities on the subject are set out in Chapters II and III, for help with which we are greatly indebted to Professor Harris and Professor Burt. They are necessarily tentative, for the years between seven and eleven have been less fully studied than have some of the earlier and later phases in the growth of children, and for the evidence

supporting these conclusions we must refer our reader to those chapters and to Appendices II and III. The broad lessons which they suggest—the necessity of correcting the effects of earlier weaknesses, and of building up reserves of health to meet the stress of adolescence ; the wide variations in intelligence which children show even by the age of five, and the consequent need for careful classification ; the necessity of avoiding over-intellectualisation and of keeping within narrow limits of any kind of instruction which imposes a severe strain on the attention ; the large place which should be given to games, singing, dancing, drawing, acting and craftsmanship ; the importance of cultivating the imagination, of appealing to the emotions, and of fostering the social spirit—none of these is likely to be disputed. Any education worthy of the name must start from the facts, and the essential facts are, after all, simple. At the age when they attend the primary schools, children are active and inquisitive, delighting in movement, in small tasks that they can perform with deftness and skill, and in the sense of visible and tangible accomplishment which such tasks offer ; intensely interested in the character and purpose—the shape, form, colour and use—of the material objects around them ; at once absorbed in creating their own miniature world of imagination and emotion, and keen observers who take pleasure in reproducing their observations by speech and dramatic action ; and still engaged in mastering a difficult and unfamiliar language, without knowing that they are doing so, because it is a means of communicating with other human beings. These activities are not aimless, but form the process by which children grow. They are, in a very real sense, their education ; and the course of wisdom for the educationalist is to build upon them. Man is a social animal, and the school is a society. The school, being organised and equipped for the purpose, is able to offer fuller and more varied opportunities for activity than is possible for a single family. The teacher, with his special knowledge and experience, is in a position to see that the activities are fruitful, and that the child is helped to pass from one to another as he is ready for it. A good school, in short, is not a place of compulsory instruction, but a community of old and young, engaged in learning by co-operative experiment.

Approached from this angle, the problem of the curriculum is seen in a somewhat different light from that in which it was envisaged even as recently as a generation ago. It has passed

in the last hundred years through three main phases, which of course overlap. In the age before the establishment of a public educational system, when even some of those who agreed that it was desirable that children should learn to read, "if only for the best of purposes, that they may read the Scriptures,"(1) were doubtful if it was desirable to teach them to write, since "such a degree of knowledge might produce in them a disrelish for the laborious occupations of life," questions of curriculum were naturally not a burning issue. In the period immediately preceding and following 1870, the period of the Revised Code and the early school boards, the dominant —and, indeed it is hardly an exaggeration to say, the exclusive —concern of most schools was to secure that children acquired a minimum standard of proficiency in reading, writing, and arithmetic, subjects in which their attainments were annually assessed by quantitative standards, with a view to the allocation to schools of pecuniary rewards and penalties. During the last forty years, and with increasing rapidity in the twelve years since 1918, the outlook of the primary school has been broadened and humanised. To-day it includes care, through the school medical service, for the physical welfare of children, offers larger, if still inadequate, opportunities for practical activity, and handles the curriculum, not only as consisting of lessons to be mastered, but as providing fields of new and interesting experience to be explored; it appeals less to passive obedience and more to the sympathy, social spirit and imagination of the children, relies less on mass instruction and more on the encouragement of individual and group work, and treats the school, in short, not as the antithesis of life, but as its complement and commentary.

What is needed now is not to devise any new system or method, but to broaden the area within which these tendencies are at work. It is not primarily a question of so planning the curriculum as to convey a minimum standard of knowledge, indispensable though knowledge is, and necessary as is the disciplined application by which alone knowledge can be acquired. The essential point is that any curriculum, if it is not to be purely arbitrary and artificial, must make use of certain elements of experience, because they are part of the common life of mankind. The aim of the school is to introduce its pupils to such experiences in an orderly and intelligent

(1) Cf. Sir T. Bernard, *The Barrington School* (1815), p. 99 "The progress of a child through the Barrington School, may be considered as a preparation for the reading of the Bible."

manner, so as to develop their innate powers and to awaken them to the basic interests of civilised existence. If the school succeeds in achieving that aim, knowledge will be acquired in the process, not, indeed, without effort, but by an effort whose value will be enhanced by the fact that its purpose and significance can be appreciated, at least in part, by the children themselves.

Thus conceived, the curriculum of a school acquires a higher degree of unity than is possible so long as it is regarded as a series of separate, if related, subjects. It is unified by the common relevance to the growth of children of the different elements composing it. Growth is, from one point of view, and a point of view which is peculiarly vital for young children, a physiological process, and the foundation of a school's activities must clearly be care for the physical well-being of its pupils. On the work of the school medical service, beyond expressing appreciation of the triumphs which it has won and emphasising the urgent need of its progressive extension, we do not propose to dwell. But the health of children is not only the concern of a special service, crucial though the importance of that service is. The effort to promote it should inspire every side of the nation's educational activities, from the planning and equipment of the schools and their surroundings to the time devoted to games, and indeed to the whole atmosphere in which a school's work is carried on.

Professor Burt drew in his evidence a moving picture of the effect of a squalid environment not only on physical, but also, if the two can be distinguished, on mental energy. Its result, he writes, is a " lack of mental vitality . . and a chronic condition of mental fatigue. . . Much so-called laziness is really the outcome of a defence mechanism, arising out of genuine physical weakness." The school cannot eradicate these conditions, but it can do much, and should do more, to counteract their effects. Excellent advice as to health talks and practice for children under the age of eleven, is contained in the Board's *Handbook of Suggestions for Health Education* (1928), and we take it for granted that all teachers and administrators are familiar with this. But, at this stage of life, formal instruction, as our witnesses agreed, is less important than the influence of the environment supplied by the school itself, and the provision of ample opportunities for healthful activity as part of its normal work. It is idle to give lessons in hygiene and good manners if the surroundings in which

children pass 27 hours each week are unhygienic or mean. It should hardly be necessary to insist not only that class rooms must be sunny and airy, but that every school should contain proper accommodation, lavatories with an abundant supply of hot water wherever possible, cloak-rooms with facilities for drying wet clothes and boots, a provision of drinking water, and provision for school meals where necessary. The more closely the design of the primary school approaches that of the open air school, the better.

A point less generally appreciated, perhaps, though second only in importance to these familiar truisms, is that the physical culture which is the concern of the school should aim at much more than merely ensuring that children obtain the sunlight, fresh air, and exercise, which are necessary to health. It should have as its object, as we point out in Chapter VII, not merely well-being, but the simultaneous development of physical and mental powers in harmonious interplay. Bodily poise and balance, a habit of natural and expressive motion—these qualities are not merely physical accomplishments which add grace to life, but are intimately connected with intelligence and character. Such forms of excellence, *gymnastiké* in the classical sense of the term, have sometimes in the past been regarded as among the ornaments of existence with which the schools attended by the majority of the population were not directly concerned. If, however, they are to become, as they might and should, a national possession, the outward sign and symbol of a common culture and civilization, it is precisely in the primary schools that they require to be cultivated. Dancing, singing, music, the drama, are the means of cultivating them.

Physical culture, as an agent, not merely of health, but of *eurhythmia*, must be the foundation of the school's activities, because a child is, in the first place, a growing organism. But the child is not only an organism with biological needs ; he is also a member of the human family. His environment is a civilization created by man. Just as, if he is to survive, he must adapt himself to the requirements of the physical world, so, if he is to be at home in that civilization, as one free of the house, he must acquire some familiarity with the elementary processes which civilization employs and catch a glimpse of the foundations on which it reposes. Language, as the expression of thought and the instrument of human intercourse, constructive work which at once stimulates the

intelligence and gives an insight into the significance of the great historic crafts, the appreciation of beauty and the creation of beauty in simple forms, the enlargement of the individual's horizon by contact with other minds through literature and the discovery that life has a past and future as well as a present, some knowledge of the simpler facts of the material world—these things, it will be agreed, lie at the basis of an intelligent participation in the life of society, and are to be regarded, therefore, as fixing the general character and direction of the school curriculum. What is important is not that a high standard of attainment should be reached in any one of them, but that interest should be quickened, habits of thoroughness and honesty in work established, and the foundations on which knowledge may later be built securely laid. The production of juvenile authors, mathematicians and scientists is neither to be anticipated nor to be desired. It is reasonable, however, to expect that in the primary school children should learn, within the limits of their experience, to use the noble instrument of their native language with clearness and dignity, a matter in which English education has hitherto been noticeably inferior to that of France ; that they should acquire simple kinds of manual skill and take pleasure in using them ; that they should admire what is admirable in form and design ; that they should read some good books with zest and enjoyment ; and that they should learn that the behaviour of the physical universe is not arbitrary or capricious, but governed by principles, some at least of which it is possible for them to grasp.

Such a curriculum includes several different elements. Each of these elements, language and speech, manual work, art, history and geography, mathematics, science and the study of nature, obviously opens unlimited vistas. Each is the sphere of a different specialism and each is often described as a separate subject. For certain purposes, and in certain connections, the description is just. The technique of learning or of teaching one of them is different from that which is required for another, and in an addendum to this Report we discuss in some detail the important and difficult problems suggested by these different parts of the curriculum ; but divergent streams spring from a common source in human experience, and methods appropriate to children of an age when they can follow specialised interests along the lines of logical development are not necessarily best suited to a stage when curiosity is strong but the capacity for logical analysis and consecutive

reasoning is still relatively weak. Subjects are not independent entities, but divisions within the general field of knowledge, whose boundaries move, and should move, backwards and forwards. They are artificial, in the sense that the classification which they represent is not an end in itself, but the means by which some measure of order and system is introduced into the complex world of intellectual interests. At one stage of education it is important to emphasise the characteristics peculiar to each as a separate discipline, at another the common experience which underlies them all. Both these aspects of the truth are vital, and neither must be sacrificed; but they are not equally relevant at all periods of life. In the secondary school, which is designed for children over eleven, that which may more properly be emphasised is the first, not the second. In dealing with children of the age when they attend the primary school, the more important aspect is the second, not the first.

We agree, therefore, for the reasons explained at greater length in Chapter VII, with the large number of witnesses—the majority, indeed, of those coming before us—who pleaded that the pursuit of primary school studies in the form of distinct and separate "subjects" was not the method best calculated to meet the needs of young children. We think that the time has now come to consider these conventional categories with a view to relating the curriculum more closely to the natural movement of the children's minds. In making this statement, we wish to guard, at the outset, against possible misapprehensions. We are far from desiring to remove the backbone of intellectual discipline from the work of the school, or to imply that, even within the primary school, the same method of presentation is equally suitable for pupils of different ages, or to lend countenance to the suggestion that teachers should follow any stereotyped system or rely on any single device, however attractive. There are obviously certain parts of the curriculum—for example, reading, writing and arithmetic—which are the tools of education, and a reasonable proficiency in which requires regular practice. As children advance in years, they approach more nearly to the stage when different branches of knowledge become the subject of special study. Teachers must be guided by their own insight and experience, and must use the methods which they are conscious they can use best. With these qualifications, however, we are with the majority of our witnesses strongly of the opinion that primary education would gain greatly in realism and power of inspiration if an

attempt were more generally made to think of the curriculum less in terms of departments of knowledge to be taught, and more in terms of activities to be fostered and interests to be broadened. Hitherto the general tendency has been to take for granted the existence of certain traditional "subjects" and to present them to the pupils as lessons to be mastered. There is, as we have said, a place for that method, but it is neither the only method, nor the method most likely to be fruitful between the ages of seven and eleven. What is required, at least, so far as much of the curriculum is concerned, is to substitute for it methods which take as the starting-point of the work of the primary school the experience, the curiosity, and the awakening powers and interests of the children themselves.

Whether such an approach to the problem is to be described by some special name, such as the "project" method, is of minor importance. The essential point is that the curriculum should not be loaded with inert ideas and crude blocks of fact, which are devoid of significance till related to some interest in the minds of the pupils. It must be vivid, realistic, a stream in motion, not a stagnant pool. Nor are we concerned to elaborate in detail the precise procedure to be deduced from these premises. If the point of view for which we plead is generally accepted, teachers will find little difficulty in translating it into practice. The fundamental idea of starting from a centre of interest and exploring in turn the different avenues which diverge from it is involved, after all, in all intellectual activity which is not merely formal or imitative, and if its educational significance is sometimes overlooked, the reason is not that it is novel, but that it is too familiar. What is needed in education, as elsewhere, is a little cold realism, or in other words, the art that overcomes art. A boy is interested in steam engines: let him start from his interests, make a rough model of an engine, discover something about the historical process of its invention and improvement, read a little about the changes in the life of society which have been produced by it, make a map of the transport system of his own town and country, learn something about the lives of famous engineers, and study in outline the part which steam plays in linking together different parts of the world. A girl has heard her parents discuss the price of food: let her learn something about the countries from which it comes, the processes by which it is conveyed, the crafts concerned in its production and preparation, what agriculture

is and the changes through which it has passed and is passing, the life of the rural population in her own country and elsewhere. Children visit a place of historical interest, a church, a castle, the site of a British or Roman camp ; let their work before and after the visit be planned round it, and the pupils be told of its place in history, paint such features of it as they can, make a map of the surrounding region, and act where possible some of the famous scenes associated with it, making the dresses and scenery for themselves.

Such methods of giving concreteness and reality to the work of the school are already often practised and need no lengthy explanation. They will naturally vary from place to place, and from town to country. In the latter, indeed, they should be specially easy and profitable. We do not share the view sometimes advanced that a special curriculum should be devised for rural schools ; it is even less desirable that the education of the country should be urbanised. The business of the school is to make good human beings, not countrymen or townsmen ; nor is it irrelevant to point out that a large number of country children will later live and work in towns. What is necessary is that the curriculum of the school should make every use of the environment of the pupils. It will use one sort of material in a colliery or textile district, and another in an agricultural village, where nature supplies living specimens for children to observe, where plants, birds and animals, the configuration of the country and its geological characteristics, can be studied at first hand, where the weather is not merely an unavoidable inconvenience but a significant phenomenon, and where gardening and the keeping of animals can be carried on without difficulty. What is important in each case is that, while the indispensable foundations are thoroughly mastered, the work of the school should be related to the experience and interest of the children. Education must be regarded not as a routine designed to facilitate the assimilation of dead matter, but as a group of activities by which powers are exercised, and curiosity aroused, satisfied, and again aroused.

This touches closely the ethical element in education which we must keep constantly in the front of our minds and in the very forefront of our teaching. There is a danger lest the technical aspects of teaching may be allowed to obscure the profound moral influences which the schools will have in the future life of the pupils. At the moment, we are thinking

of the character of the occupations that the pupils will follow in after years, of the training that these occupations will give them and also what they will fail to give, and of how far the schools may compensate for the defects in this training. When the smith " sitting by the anvil ", and the potter at his wheel, and " every carpenter and workmaster " had to be diligent " to finish his work," and set his mind " to polish it perfectly " ; when every craftsman had to see a job through from its beginning to its end, and did not share it with a hundred others—the problems of school training, and of home training also, must, we imagine, have been simpler than they are to-day. High seriousness of purpose, sustained effort, persistence and will power, were virtues that were born of necessity ; they were thrust upon the workman by the very nature of his work. Conditions have changed, and we cannot escape the consequences of the change. The question is how far what was formerly achieved through the character of man's work can now be achieved through the spirit of the work alone ; and how far the schools can help to bring forth the fruits of the spirit. This is the problem that faces the schools to-day, a problem that wore a different aspect yesterday. We dare not hope that it will be more than partially solved ; but in some measure, we trust, school training may succeed in making up for what must remain under conditions of work to-day inevitable deficiencies in the later industrial training of the pupils.

Problems of the curriculum cannot be separated from problems of organisation, for on the treatment of the latter depends the possibility of a wise handling of the former. There are the questions of the relation of the school for children between seven and eleven to the schools which succeed it and to the infant school ; of the classification of its pupils and of the lines on which their work is to be planned, and of the structure, equipment and staffing of the school itself. For the detailed discussion of these subjects we must refer our readers to the relevant chapters of our Report. There should be no sharp break between the successive stages of a child's education, and it is obviously important that close personal relations—the more intimate the better—should be maintained between the teachers who will receive children at seven years of age and those responsible for them in the infant stage. It is equally obvious that care should be taken that the work of the primary school is not dominated or biassed by the demands of the later stages of education, or by the free place examination. When

a child's whole future may be determined by his success in winning a free place or his failure to win it, the temptation to allow the curriculum to be influenced by the examination, or even to prepare children for it, is inevitably strong, and we must repeat the conviction, to which we gave expression in our *Report on the Education of the Adolescent* that the easy access of all children to some form of secondary education would improve the quality of the work done in primary schools, by lightening the pressure which at present they too often feel. But though the temptation is strong, it is one which, even under present conditions, ought strenuously to be resisted. The primary school has its own canons of excellence and criteria of success; it must have the courage to stand by them. It will best serve, in the long run, both the children and the general cause of education, if it develops its own virtues to the best of its power, and refuses to be distracted from its special task by an anxiety, however natural, to make certain that its pupils do themselves justice in an examination.

To these topics we return below; nor need we elaborate here what we say elsewhere as to the importance of ensuring that the premises and equipment of schools are not merely adequate, but attractive and inspiring. Children think of themselves as their elders show that they think of them, and the expenditure involved in giving grace and amenity to the physical surroundings of education is repaid a thousand-fold in the heightened vitality and self-respect of those who receive it. The internal organisation of the school calls, however, for a word of notice. Children differ widely in their natural endowments, and these differences become important, as we show in Chapters II and III, even as early as at the age at which they leave the infant school. Unless the quicker among them are to be held back, and the slower unduly pressed, it is necessary to take account of these varieties of ability in planning their work. We are not thinking for the moment of the special problem of the retarded child, which is discussed at some length in Chapter VI. What we have in mind is the necessity of classifying normal children of different grades of ability in a manner which, without being pedantic or meticulous, may enable each to advance at the pace suited to him. The possibility of better classification is one of the improvements made possible by the regrading of education, which has as its effect that the pupils between seven and eleven form a more homogeneous group than in the past, and we would call the attention of our readers to the examples illustrating various alternative

methods which are given in Chapter V. Naturally, they can be employed only when the school population is sufficiently large to make subdivision practicable, and are, therefore, inapplicable to the small school with 25 to 50 pupils. In such schools the problem is at once more difficult and easier, more difficult because children of different ages and capacities must be taught together, easier because, owing to the smallness of numbers, attention to individuals should be more readily secured. This has been done in certain rural schools with marked success.

A different, but closely related, point, for the careful consideration of which we would plead, is the importance of providing liberal opportunities for individual work under the guidance of the teacher. After what we have said above as to the necessity of the acquisition, by constant practice, of a habit of correct and lucid speech, the main influence in the formation of which must be the example of the teacher, we shall not be suspected of underestimating the value of oral instruction. But a school is a synthesis of different activities, each of which must be given its due, and all of which suffer if less than justice is done to any one of them. If there is a place, and a place of high significance, for collective teaching, and for lessons that bring together a class of pupils with the heightened glow born of common effort, there is also a place, and a not less important one, for individual study, and for the co-operative work of small groups of children, who teach themselves in assisting each other, and in the guidance of whom the function of the teacher is less that of an expositor than of an adviser and consultant. We are not concerned to advocate any particular method or plan ; indeed we regard with some suspicion those which do not spring naturally from the experience of the teachers and take their colour from the character of the school adopting them. But we feel strongly the importance of ensuring that organisation is sufficiently fluid to permit of a happy mixture of individual work and group activity with class work, and of an easy transition from one to the other. In the school, as in life, what is most to be desired is a combination of individual responsibility and initiative with the co-operative spirit.

Such a conception of the work of the primary school imposes heavy responsibilities upon the teachers. It involves not only the devoted and conscientious effort which is so freely given, but imagination and adaptability,

the initiative to break with routine and the ingenuity to devise improvements. If this conception is to be generally realised in practice, as in an increasing number of schools it is already realised, teachers must not be hampered, as too often they are to-day, by unsuitable buildings or by inadequate staffing. We should deprecate very strongly, for example, any tendency to make the improvement of the schools attended by the older children an excuse for offering inferior accommodation to children under the age of eleven, nor can we accept the view that classes in primary schools may properly be of a larger size than those in schools for children over the age of eleven. As we state in Chapter VIII, we think that, at the earliest possible date, the staffing of primary schools should be such that the size of classes in the former is not larger than in the latter. A class in a primary school should not contain more than 40 pupils, and, where there are a considerable proportion of retarded children, it should be much smaller. The head teachers of all primary schools, however small, should be certificated, and the employment of uncertificated teachers as assistants should be reduced to the lowest point possible. On the preparation of the teachers for their profession, which is discussed in Chapter VIII, it is not necessary for us at this point to dwell. While it is clearly desirable that training colleges should bear carefully in mind the needs of the teacher of children between the ages of seven and eleven, we do not desire a system of training which would have the effect of confining teachers at an early period in their career to one particular type of school. There should be regular and easy movement from primary to secondary schools and conversely. The essential point, on which all else depends, is that the work of teaching children between seven and eleven years of age should be recognised as not less fascinating, less exacting, less fraught with human interest and social significance, or less worthy of teachers of the highest attainments, than any other part of the educational system. If the vital importance of this task is appreciated by the public, as it is already appreciated by the teaching profession, there is no reason to doubt that sufficient numbers of men and women, with the right spirit and qualifications, will be available to perform it.

The evidence which we have received in the course of our inquiries shows that such appreciation is being increasingly given. It should not, indeed, be difficult to give it. Few features in the history of the last thirty years are more striking

or more inspiring than the improvement in the health, the manners, the level of intellectual attainment, the vitality and happiness of the rising generation. In that improvement the schools have played no unimportant part. The primary school is on the way to become what it should be, the common school of the whole population, so excellent and so generally esteemed that all parents will desire their children to attend it. It is in the light of that ideal that we should wish our report to be read. We do not pretend to have made startling discoveries or to have enunciated novel truths. The root of the matter is, after all, simple. What a wise and good parent would desire for his own children, that a nation must desire for all children.

CHAPTER I.

THE HISTORY OF THE DEVELOPMENT OF THE CONCEPTION OF PRIMARY EDUCATION ABOVE THE INFANT STAGE FROM THE BEGINNING OF THE 19TH CENTURY TO THE PRESENT TIME.

PART I.—*The development of Infant Schools and Elementary Schools up to* 1870.

(1) The Junior School or Department [1] for pupils between the ages of 7 or 8 and 11 or 12, as it is understood to-day, is due to at least three distinct trains of causation :—

(i) The lengthening of school life effected by the Education Act of 1870 and later Acts.

(ii) The gradual organisation and grading of education, with a view to securing efficiency and economy.

(iii) The growth in the understanding of the needs of children at successive stages of their development.

Up to 1870, apart from certain educational provisions in the Factory Acts and in the Mines Acts[2], which only applied to children working in factories and mines, there was no general legal compulsion on parents to send their children to school. The Education Act of 1870 conferred on the newly established School Boards power to make bye-laws requiring the attendance of children between the ages of 5 to 10 with power to retain them at school to the ages of 11, 12 or 13, subject to the provision that such bye-laws must grant exemptions on certain conditions to pupils over the age of 10. The Education Act of 1880 turned this power into a duty. As before 1870 the provision of Primary Schools was left wholly to the voluntary efforts of different bodies, mostly denominational, aided by grants from the Treasury between 1833 and 1839 and from the Education Department as from 1839, it is not surprising to find that there was little attempt in practice to

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(1) Throughout this historical chapter we use the expression Junior School or Department as meaning a separate section, or group of classes for younger children, other than infants, up to the age of 9, 10 or 11 within an Elementary or Primary School.

(2) Factory Acts, 1833 to 1867; Mines Act, 1860.

differentiate between junior or primary instruction on the one hand and senior or post-primary instruction on the other hand, since the number of pupils who remained over the age of 10 in most primary schools was comparatively small. It is, however, interesting to find that from the very inception of the movement for the provision of popular elementary education on a large scale there was a noticeable tendency to differentiate the provision made for infants under the age of 6 from that for children over that age.

(2) The British and Foreign School Society founded in 1808, and the National Society for Promoting the Education of the Poor in the Principles of the Established Church, founded in 1811, supported the monitorial systems of Joseph Lancaster and Dr. Andrew Bell respectively. The principal aim of these systems was to impart to children of 6 years of age and upwards the rudiments of religious knowledge and of the 3 Rs., with a little needlework for the girls. For instance one of the rules of the British and Foreign School Society was that no child under the age of 6 should be admitted to a British School, and that when there was serious pressure on the school accommodation, the minimum age of entrance should be 8.(1) At a stage in the development of primary education, when two years was regarded as sufficient for a child to acquire a knowledge of reading, writing and cyphering, and when mass instruction by means of monitors was in vogue, it could not be expected that much attention would be given to the educational needs of children of different ages (2).

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(1) In practice, children of the age of 4 were admitted in many districts to the monitorial schools associated with the National Society, and children under the age of 6 were also admitted to many British Schools. It would appear that the actual age of admission depended largely on local circumstances. As time went on, and as the monitorial system failed to realise its first promise, there was a marked tendency for the average age of children in attendance at these monitorial schools to fall. For instance, in 1850 approximately 50 per cent. of the children in attendance at Elementary Schools were under 8 years of age cf. Reports by Mr. Cook and Mr. Moseley in *Minutes of Committee of Council on Education*, 1851–52 ii, 5 and 34.

Cf. also Gill's *School Management*, 3rd Edition (1858), p. 110, § 4 :—

"The admission of infants to the elementary school is a disadvantage to the infants themselves and to the other scholars."

(2) One of the earliest systematic attempts to organise an Elementary School with careful classification of pupils according to age was made in the Barrington School at Bishop Auckland, opened in 1810, by the Bishop of Durham (Dr. Shute Barrington). The School was divided into six classes, each containing about 30 children. The lowest class consisted of children of the age of about 5 (Sir T. Bernard, *The Barrington School*, 3rd Edition (1815), p. 100).

(3) In tracing the development of Primary Schools for children above the infant stage, it is impossible to ignore the influence of the Infants' Schools which gradually came into existence in the early decades of the last century, partly as " minding schools " for young children in industrial areas whose parents were at work during the day, partly as a means of promoting their physical well being and furnishing opportunities for their moral and social training and partly to provide some elementary instruction in the 3 R's, which would render it possible for the children to make more rapid progress when they entered the monitorial school. Even before 1805 Joseph Lancaster had drawn attention to the necessity for improving the " initiatory," i.e. the dame schools and the minding schools(1), if children on entering the monitorial school at the age of 6 were to derive full benefit from it. The Infant School established in 1816 by Robert Owen (1771–1858) at New Lanark in Scotland had a great influence on the development of infant education. Children were admitted to the school at the age of 2 and cared for while their parents were at work in the local cotton mills. The instruction of children under 6 was to consist of " whatever might be supposed useful that they could understand," and much attention was devoted to singing, dancing, and playing. In 1818 a group of Radicals and advanced Whigs comprising Brougham, James Mill and others, combined to establish an Infant School on Owen's lines in London, and imported a teacher from New Lanark. Owen's ideas were popularised and at the same time given a new direction by Samuel Wilderspin (1792-1866), who worked out a system of infant education which left its mark for many years on the curriculum and the buildings of Elementary Schools. To him these schools owed the infant " gallery," and a mistaken zeal for the initiation of children at too early an age to formal instruction. The training of teachers for infant schools was first seriously begun by the Home and Colonial Institution (later known as the Home and Colonial Society) which was founded in 1836 to establish Infant Schools and to train teachers for work in them. The principal promoter of this Society, Rev. Charles Mayo (1792-1846) was definitely influenced by Pestalozzi.

The Society originally set out to train teachers for children under the age of seven, but later extended its scope to prepare teachers to deal with children up to the age of 10. The reason

(1) Cf. G. Crabbe, *The Borough* (1810), Letter XXIV, for a description of a dame school.

for this was that the tendency in parishes, where only one school could be established, was to organise a school for older children, and leave the education of the infants to the Dame Schools. On the other hand, in many places Infant Schools(1) preceded the Elementary Schools. It is impossible not to be struck by the contrast between the rather arid and narrow conception of education as conducted in the monitorial schools, in which the instruction was almost limited to the three R's, with needlework for girls, and in some instances a little gardening and other occupations for the boys, and the comparatively rich tradition underlying the curriculum provided in the better Infant Schools, which was largely based on ideas deriving from Oberlin, Owen and Pestalozzi(2).

(4) In the actual organisation of Elementary Schools up to 1870 there is little trace of the emergence of the idea of a school or group of classes designed to follow the Infants' School and terminate at the age of 10 or 11, though this was implied both in the teaching of the Home and Colonial Society (3) and of David Stow (see §6). Before the passing of the Education Act of 1870, it was very difficult to keep children at school even up to the age of 10. The more subtle idea of a stage more or less definite, which should complete primary education and form the basis for an advanced stage of post-primary education hardly emerges. The idea had, indeed, occurred to some of the early Inspectors of the Education Department. For instance, the Rev. F. C. Cook writes in his Report for 1846 :—

> " It seems highly desirable to establish within an easy

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(1) The following passage from Brougham's dedicatory preface to George Birkbeck of his Essay *Practical Observations upon the Education of the People* (1825), shows the important position which Infant Schools as distinct from Primary Schools had attained at that date :—

> " You are aware that the observations contain a portion of a larger discourse . . . upon the important subject of Popular Education, in its three branches : Infant Schools, Elementary Schools (for reading and writing), and Adult Schools. It is only with the second of these branches that the Legislature can safely interfere. Any meddling on the part of Government with the first would be inexpedient ; with the last, perilous to civil and religious liberty."

(2) The influence of Froebel was not felt in Infant Schools in England till about 1851. Cf. J. and B. Ronge, *A Practical Guide to the English Kindergarten* (1855), Preface, and B. Ronge, *Kindergarten* (1854), p. 3.

(3) The effect of the training given at the Home and Colonial Society's Normal Seminary was to promote the organisation of infant schools into :—(i) " babies " under three years of age ; (ii) infant children from the age of three to that of six or seven ; and (iii) " juveniles " from the age of seven to that of 9 or 10, where there was such a class. (Cf. *Minutes of Committee of Council on Education* (1845), II. 230).

> distance of small parishes good district schools, conducted by masters of reputation and talent, where, as is the case in Scotland, well disposed youths may continue and complete the studies begun in childhood."

He develops this view in his Report for 1847 :—

> " I adhere, however, to the opinion which I formerly expressed, and which I now repeat, having had the advantage of conversing with many of the most experienced supporters of education upon the subject, that in most country districts it would be advisable to have a preparatory school in each village, and a completely organised school, under the charge of able teachers, in a central locality."(1)

However, these and like suggestions made from other quarters produced little effect at the time,(2) as the provision of " elementary " schools was envisaged as a parochial matter, and as the state of public opinion respecting primary education and its relation to the higher education given in the existing Grammar Schools and Middle Schools was confused and undefined.

(5) The conception of a separate department or group for younger pupils above the infant stage, though seldom put into practice in " Elementary " Schools in England and Wales before 1870, was developed in the first half of the last century as an integral part of educational theory. It was recognised as a device of the organisation of a primary school by many educational administrators and schoolmasters in countries such as France and Prussia, where the problem of primary education above the infant stage had to some extent been faced by the State. For instance, M. Willm (3) an Inspector of the Academy of Strasburg, in a book entitled *The Education of the People*, which appeared in an English

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(1) *Minutes of Committee of Council on Education* (1846), p. 280 ; ditto for 1847–48, p. 53. A similar suggestion was made by Rev. H. W Bellairs in 1847, *op. cit.* (1847–48), p. 109.

(2) Some National Schools, and a number of Wesleyan Schools, retained a considerable proportion of children over the age of 11 and provided post-primary instruction for them. *cf.* The Consultative Committee's *Report on the Education of the Adolescent* (1926), pp. 6–7.

(3) J. Willm : *The Education of the People*, Glasgow, 1847. *cf.* The Essay on Elementary Schools in Prussia, by W. Wittich, on pages 145–171 of *Papers of the Central Society of Education*, London, 1837, in which he explains that the course in the Prussian primary schools for children between the ages of 6 and 14 is divided into four periods, each comprehending two years.

translation in 1847, pointed out that the ages of the pupils in "Primary Elementary Schools" constituted a principle of division, as the procedures in respect alike of education and instruction were not the same for children from 6 to 9 years of age as for those more advanced. "Every school, in obedience to this principle, should be divided into two great classes—the one including children from 6 to 9 or 10, the other those from 10 to 14; and it would much subserve many important purposes, if these could be taught in separate rooms."

(6) The best known advocate of such a system in Great Britain was David Stow (1793–1864), who began his work in Glasgow about 1824, some 20 to 30 years after the movement for a widespread provision of primary education through voluntary agencies had begun.

Stow, who was the founder of the Glasgow Normal School, fully realised that effective education largely depends on the influence of the cultured mind of the teacher on the comparatively unformed minds of the children. This constituted a contribution of permanent value to educational theory and practice. Too little significance had hitherto been attached in primary education to the living voice and too much to the printed page. Stow laid great stress on oral class teaching on the ground that it stimulated thought and that the teaching might then be adapted to particular circumstances. He pointed out that the number of children who could be entrusted to the care of a single teacher was limited, and that it was desirable that they should be of approximately equal ability. A new method of school organisation was required to carry out these ideas.

Stow conceived a graded system of elementary education—an initiatory department for children of 2 or 3 to 6 years of age, and a juvenile department for children between the ages of 6 and 14. This latter was again divided into junior and senior divisions; the former for children of 6 to 8 or 9 years of age and the latter for those of 9 years and upwards. These so-called schools, as described in Stow's *Training System of Education for the Moral and Intellectual Elevation of Youth, especially in large Towns and Manufacturing Villages*, 1836, were really departments or classes under trained adult teachers. In the junior school, for children between the ages of 6 and 12, one master might take charge of 80 pupils. If the school contained more than this number, an assistant was required.

(7) The practical objections to such a system in the first half of the last century were that it was costly, that the school life of most of the children in primary schools was short, and that adult teachers could not be obtained in adequate numbers. In consequence, few schools were established in England and Wales on Stow's system, except with extensive modifications ([1]). The usual arrangement was to establish a school consisting of an Infant Department for children up to the age of 6, and a Senior Department for children between the ages of 6 and 12, the master or mistress in each case being assisted by monitors.([2])

Sir James Kay-Shuttleworth, the first Permanent Secretary of the Education Department established in 1839, recognised the shortcomings of the monitorial schools and made an important contribution to the general development of primary education by introducing a modified form of the Pupil Teacher System which he had seen in Holland ([3]), and so preparing the way for a large supply of adult teachers. The small " all-age " school for children between 6 and 12 often developed into a school with three or more classes, in which one teacher took a section for an oral lesson, while assistant teachers took other sections for written work in arithmetic and for exercises in reading, dictation and composition ([4]). This system became common after about 1856, and was in vogue alongside the conventional Pupil Teacher system, where children were divided into classes in a long narrow room, each class being in charge of a pupil teacher, while the master took one class at a time for oral instruction.

(8) An examination of works on school method published during the last century indicates that before 1870 almost the only clear conception of junior classes ([5]) was that put forward by Stow. Even up to about 1900 most of the works on School Method which were in common use in the Training Colleges contain few traces of the idea that separate treatment was desirable for the younger pupils above the infant stage.

([1]) Cf. J. Gill, *School Management* (ed. 1876), p. 68. Gill, who had been trained at the Glasgow Normal College under Stow's influence, was Professor of Education at Cheltenham Normal College.

([2]) See Birchenough, *History of Elementary Education* (2nd Ed.), pp. 338–40.

([3]) Kay-Shuttleworth, *Four Periods in Public Education*, (1862), p. 394.

([4]) The tripartite system of organisation is described by Mr. Moseley in *Minutes of Committee on Education*, 1845, p. 249–56.

([5]) T. Morrison's *Manual of School Management* (1859), adopted for Wesleyan schools, recognised the need for an infant class and for junior classes. In the Preface he acknowledges his debt to Stow.

Probably one of the first books of this type which drew attention to the significance of the junior stage in education was Professor J. J. Findlay's "*Principles of Class Teaching*," first published in 1902. In it the whole problem of school organisation is considered, not so much from the point of view of expediency, but as an attempt to provide for the physical and mental development of children. The life of the ordinary child is shown to fall more or less naturally into several stages, the stage of infancy up to the age of about four, the stage of early childhood from four to six, the stage of later childhood from seven to nine, and the stage of boyhood or girlhood after ten. Professor Findlay urged the desirability of a break at the age of eleven, with primary education for children under that age and secondary or post-primary education for pupils of the age of eleven plus and beyond. It is worth mentioning that a somewhat similar system of training was proposed in 1841 by William Lovett (1800–1877), the Chartist, as part of a general scheme. Lovett provided for infant schools or departments for children between the ages of three and six, preparatory schools for children between the ages of six and nine, High Schools for those above the age of nine.(1)

(9) An important stage in the development of both infant and so-called elementary education is marked by the Report of the Royal Commission appointed in 1858 under the chairmanship of the Duke of Newcastle " To inquire into the state of public education in England and to consider and report what measures, if any, are required for the extension of sound and cheap elementary instruction to all classes of the people."

In their Report, published in 1861, the Commissioners classified the Institutions for the education of the independent poor in reference to their objects, as—Infants' Schools, Day Schools, Evening Schools, and Sunday Schools. It is thus evident that Infants' Schools were definitely regarded at that period as being in a separate class from the Day or Elementary Schools.

On page 31 of the Report attention is drawn to the importance of Infants' Schools in the progress of Day Schools—

> " Mr. Shields, a schoolmaster of experience in London, who was examined before us, gave it as his opinion that the improvement and extension of infants' schools was the way in which the extension of popular education

(1) W. Lovett and J. Collins, *Chartism, a new organisation for the People*, London, 1840, pp. 37–40.

must next be attempted, and he also thought that the quality of the schools depends principally on the care with which the teachers are trained. By careful management of the infant schools he thought that children might be so prepared for the day schools as to learn thoroughly well all the absolute essentials of education by 11 years of age, but he said, 'If you leave out the infant school you wreck my plan entirely.'"

The Commissioners expressed the opinion that infants' schools formed a most important part of the machinery required for a national system of education.

(10) The Report of the Newcastle Commission was the first real survey of the extent and quality of Elementary Education in England and Wales. The Commissioners reported that even the best of the existing elementary schools had a serious defect. They taught tolerably well those children who by steady attendance could reach the comparatively small class or group at the top of the school, but below this top group the great mass of children received only a very imperfect education, being placed in charge of pupil teachers and left, in many instances, to struggle as best they could. Even in the best schools only about one-quarter of the boys reached the highest class and were considered by the inspectors to be successfully educated. The Commissioners held that the time had come when a further attempt should be made to influence the instruction of the large body of inferior schools which had hitherto been little affected. They proposed to do this by offering distinct inducements to the masters of all schools to bring their pupils, junior as well as senior, to a certain mark.

(11) It devolved on Mr. Lowe, as Vice-President of the Committee of Council on Education, to make administrative changes to meet the criticisms of the Royal Commission on existing arrangements. The Revised Code of 1862 accordingly instituted a system of six standards corresponding to the six years of school life between the end of the infant stage and the age of 12. Grants could not be earned by children above that age. This arrangement had the effect of leading teachers to devote most of their attention to pupils below the age of 12 and to concentrate on the teaching of the three rudimentary subjects, together with needlework for girls. As the first standard examination was for children of 6 to 7, the younger children or infants were not officially brought under the drastic conditions of the Code. The Code, however, had an

indirect effect on Infant Departments, since the strain of preparing children of the age of 6 to pass into Standard I reacted on the teaching of children under that age. This fixed for a long time the definition of Infants—they were children below Standard I. Even in schools where for reasons of organisation and economical use of space the children in Standard I were retained in the Infant Section, Standard I was still subject to the Code requirements, and it was only later that teachers ventured to apply to children in that Standard some of the more apposite methods which were in use in Infant Classes. Thus in a sense the Infant School was more free to develop than the school for older pupils. This freedom, however, was within narrow limits, since the children had to be prepared for the Standard I Examination, and since most of the teachers still held the traditional view that their principal duty was to teach the 3 R's even to the youngest children. A further effect of the Lowe Code was to impress on the minds of teachers the idea that primary education was embraced by the curriculum prescribed for the six Standards.(1) To do the scheme of Standards justice it was skilfully graded.(2) Impossibilities were not demanded of the teachers, and when the mass of young illiterate children that formed the body of most schools, had been passed through the first two Standards, the remaining requirements of the Code could be fulfilled at the cost of reasonably hard work, except in schools with inadequate staffs, bad attendance, or a very poor class of children.

PART II.—*The period from* 1870 to 1918. *The gradual emergence of the idea of post-primary education for children above the age of* 11 *or* 12.

(12) Up to 1870, the general development of Infants' Schools and so-called Elementary Schools, with their Higher Classes where such existed, had been uneven and irregular. The passing of the Act of 1870, which mapped out England and Wales into School Districts, each of which might have a School Board with the duty of providing Elementary Education within its own borders, directed attention for the first time to the problems involved in providing suitable schooling for large numbers of children up to the age of 13.

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(1) A Seventh Standard was added in the Code of 1882, and marked the incipient tendency to develop some form of post-primary education.

(2) See the Consultative Committee's *Report on Psychological Tests of Educable Capacity*, 1924, pp. 43–4.

Section 5 of the Act ordered that for every School District there should be school places in Public Elementary Schools for all children resident in the district for whose elementary education efficient and suitable provision was not otherwise made. Section 74 authorised the School Boards to frame bye-laws making attendance at school compulsory for children between the ages of 5 and 13. This provision was only permissive, and the bye-laws when made were subject to many exceptions. The problem for the larger School Board in the early seventies was to provide economical and effective schooling for great numbers of children. A new system of school organisation was outlined by the Committee appointed by the first London School Board in 1871, with Professor T. H. Huxley as Chairman. The Committee pointed out that Public Elementary Day Schools might conveniently be classified into Infants' Schools for children below 7 years of age; Junior Schools for children between 7 and 10 years of age; and Senior Schools for older children. The Committee recommended that Infants' Schools should be mixed, but laid down no general rule with respect to Junior Schools. It was recommended that Senior Schools in the London area should be separate, and that a Board School should contain under one management an Infant School or Schools, a Junior School, a Senior Boys' School, and a Senior Girls' School (1). These recommendations appear to have had little effect in practice.

The Committee insisted strongly on the importance of schools for children under the age of 7, as in a properly conducted Infant School children were not only withdrawn from evil and corrupt influences and disciplined in proper habits, but received such an amount of positive instruction as greatly facilitated their progress in the more advanced schools. It may be noted that one important effect of the Act of 1870 was to make Infant Schools or Departments a permanent part of the new Public Elementary Schools. As a consequence, most of the Dame Schools, which had survived in large numbers up to 1870, disappeared in the early seventies.

(13) This general scheme of organisation for Public Elementary Schools as accepted in principle by the London School Board was copied with modifications by various School

(1) *Minutes of School Board for London*, Vol. I, pp. 155-61. A similar plan of organisation for very large public elementary schools was suggested by the Rev. J. H. Rigg in his book *National Education* (1873), pp. 424–425.

(2) Rigg, *op. cit.*, appendix C: E. R. Robson, *School Architecture* (1874), p. 294 and appendix C.

Boards, especially those in urban areas. On the whole, however, Junior Schools did not at the outset come much into vogue even in the large towns. As a rule, the arrangement was preferred of providing Infant Schools, and so-called "Senior" Schools for pupils between the ages of 7 and 12 or upwards. In fact, Junior Schools of the type contemplated by the London School Board in 1871 represented a type of organisation which was immediately convenient only in densely populated areas. A Junior School for children between the ages of 7 and 10 generally consisted of the children in Standards I and II, or of those in Standards I, II, and III, while the higher standards were accommodated in the Senior School. This grouping was found convenient at a period when the Code provided for instruction in the 3 R's and in "class" subjects for the first three Standards, and only sanctioned the addition of "specific" subjects for the pupils in Standard IV and upwards.(1) It enabled the Head Teacher to concentrate on part of the Elementary School Syllabus.

The Building Regulations issued by the Education Department after 1870, and the contemporary books on school architecture, throw considerable light on the ideas on organisation current in the last three decades of the 19th century. The existing distinction between the infants' school and "the graded school" with its six standards is accepted as axiomatic. For example, the *Rules to be observed in planning and fitting up schools*, issued by the Committee of Council on Education in 1871, state that infants should never be taught in the same room with older children, "as the noise and the training of the infants disturb and injuriously affect the discipline and instruction of the older children."(2)

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(1) The curriculum of an Elementary School from 1875 to the later nineties consisted of three main parts:—(i) the obligatory subjects, i.e., the 3 Rs., which were often called the "elementary subjects," together with Needlework for girls; (ii) Optional subjects, viz.: (*a*) the class subjects first introduced in the Code of 1875, which were optional for the whole school above Standard I; (*b*) the specific subjects first introduced in the Code of 1867, which might be taught to individual scholars in Standards IV to VI.

(2) This provision reappears in a more emphatic form in Rule 18 of the Rules to be observed in planning and fitting up Public Elementary Schools for 1904, which runs—"Infants should not, except in very "small schools, be taught in the same room with older children, as the "methods of instruction suitable for infants necessarily disturb the "discipline and instruction of the other scholars. Access to the "infants' room should never be through the older children's school-"room."

(14) The gradual lengthening of compulsory school life effected by the Education Acts of 1870, 1876 and 1880, forced the Education Department, the School Boards and the teachers to try to devise better modes of classifying children of different ages(1), and was directly responsible for the demand for improved forms of education for older pupils, which was met to some extent by the Higher Grade Schools established by some of the larger School Boards from about 1876(2). These in turn pointed to the need for a clearer demarcation of the junior stage of education. There are various passages in the Reports of the Cross Commission (1886–1888), and particularly in the Final Report (1888)(3) which indicate that the idea of separate Senior and Junior Departments was gradually becoming more explicit, largely owing to the development of Higher Grade Schools. For example, one of the questions considered by the Commissioners was whether Public Elementary Schools generally should be graded in such a way as to bring about a complete break at the age of 11 or 12.

A number of School Boards had by 1890 already adopted in some of their schools a plan of organisation involving Infants' Departments; Junior Departments, composed of children in Standards I, II and III; ordinary Senior Departments composed of children in Standards IV, V and VI, and Higher Grade Departments for exceptional children in Standard V and upwards. Other School Boards had some Schools organised as Infant Departments, Juniors' Departments for children in Standards I and II, and Seniors' Departments for pupils in Standards III to VII. During the period from 1888 to 1900 there was no great increase in the number of Higher Grade Schools, but a distinct rise took place in the general level of elementary education. A system which was coming into vogue in the areas of many School Boards of grading Elementary Schools into Junior, Middle, and Senior Departments, enabled improvements to be made in the courses of instruction for young children.

(15) Increasing knowledge regarding the mental and physical development, the tastes, aptitudes, and interests of

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(1) The Rev. James Fraser (afterwards Bishop of Manchester) in his *Report on the Common School System of the United States* (1866) prepared for the Schools Inquiry Commission (1864–1868), had called attention to the importance of grading schools (see especially p. 319).

(2) Cf. Consultative Committee's *Report on the Education of the Adolescent* (1926), pp. 17–25.

(3) Final Report of the Commissioners appointed to inquire into the Elementary Education Acts, England and Wales. C.—5485.

young children, and the great improvements which from about 1875 had been taking place in infants' education, gradually directed public attention more and more to the need for improved methods of teaching during the transitional years 6 to 9. This trend of thought found partial expression in the *Instructions* issued by the Education Department to the Inspectorate in 1894,(1) and reproduced in successive Instructions up to 1900, in which special attention was called to the fact that the organisation and work of the lower Standards in Public Elementary Schools was the least satisfactory part of the existing educational system. Efforts for improvement were facilitated in the early nineties by the gradual relaxation of the more rigid provisions of the Lowe Code of 1862 and subsequent Codes. Among the devices suggested by the Education Department and the School Boards for improving the teaching of the lower Standards were the introduction of occupations of various kinds, an amended system of object and observation lessons, and greater elasticity in the school work generally.

(16) From about 1895 Mixed Departments (2) became more popular, and in new schools the arrangement was often adopted of a horizontal division into Junior Mixed and Senior Mixed, rather than a vertical division into boys and girls. The latter type of organisation was popular in urban areas as it avoided the need for making separate provision for Senior pupils. Sometimes Board Schools were organised as Junior Mixed Departments with Senior Boys' and Senior Girls' Departments above them. The Junior Mixed Department usually included Standards I, II and III, but in some areas it consisted of Standards I and II only. This arrangement was largely dictated by convenience of organisation, since it facilitated the separation of the gifted children from the slower children. It was also defended on the ground that the establishment of distinct Junior Schools or Departments gave to the junior children the benefits of the improved methods of teaching, which had been adopted with satisfactory results in Infants'

(1) *Revised Instructions* (1894) pages 56–57 (Circular 322).

(2) There had always been a certain prejudice against combined schools (and departments) for boys and girls, even when the numbers were small. Thus, Matthew Arnold, in 1852, urged in the interests of educational efficiency the advantage of establishing an Infant Department and a Mixed Department, instead of separate boys' and girls' departments, which left the young children to be dealt with as best they could, and constituted a permanent drag on the work of the older scholars. M. Arnold. *Reports on Elementary Schools*, 1852–1882, H.M. Stationery Office, 1920, pp. 14–15.

Schools. At this stage there would seem to have been no clear concept of a full primary course complete in itself.

Junior Schools or Departments consisting of Standards I and II, or of Standards I, II and III, of the type described above, were criticised on the ground that head teachers of such schools saw neither the beginning nor the ending of a child's school life. Also the abolition of annual examinations in 1895 left head teachers free to set up their own standards of attainment, and a pupil might spend three years in passing through Standards called IIc, IIb, IIa and II. Such drawbacks led many teachers and administrators to revert to the older idea of a vertical division into Boys' Departments and Girls' Departments for all children above the infant stage.

(17) Towards the end of the 19th century some of the larger School Boards developed a type of Junior School which had some of the characteristics of a Primary School for pupils up to the age of 12. These Junior Schools formed, in effect, the Junior Departments of the Higher Grade Board Schools. A Junior Department attached to a Higher Grade School often became an important feeder of the main school. As a rule these Junior Schools and Departments took pupils up to the age of 11 or 12 and were generally organised as Junior Schools for boys and girls respectively.

(18) The control of the Board of Education over Secondary Schools was increased by the Education Act of 1902, which empowered the newly established Local Education Authorities for Counties and County Boroughs to aid higher education and to provide new Secondary Schools. Even before the passing of that Act, the position of the Higher Grade Schools had been seriously affected by the decision of the Court of Queen's Bench (1901) against the London School Board (upheld by the Court of Appeal), on the point raised by Mr. Cockerton, the Auditor of the Local Government Board, that the London School Board had spent the rates illegally on educating children on lines not provided for in the Code.[1] After the passing of the Act of 1902, many of the Higher Grade Schools were converted into Secondary Schools, receiving grant under the Board's Regulations for Secondary Schools. A modified type of Higher Elementary School was established by the Board's Minute of April 6th, 1900, but for various reasons the number of schools recognised officially as Higher Elementary Schools was small.

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[1] R. v. Cockerton (1901) I.Q.B. 322, and Rex v. Cockerton, C.A. (1901) I.K.B. 726.

These developments had important effects on the incipient development of Junior Schools and Junior Departments described above. It is not possible, from the available official statistics for this period, to show the distribution and extent of the various types of organisation for children above the infants' stage, such as Boys' Departments, Girls' Departments, and Mixed Departments; Junior Mixed Departments and Senior Mixed Departments; Junior Boys' and Junior Girls' Departments, and Senior Boys' and Senior Girls' Departments(1). It is interesting, however, to observe that in official statistics down to the passing of the Education Act of 1918, the old distinction between "infants" and "older" scholars survives. For instance, an explanatory note on the term "Department" on page 149 of the *Statistics of Public Education in England for* 1912–13, states that "A Department is a portion of a School which normally has a separate Head Teacher. 'Departments for Infants only' may be taken to be Departments for younger scholars between the ages of 3 and about 9. Other Departments are described as "Departments for older scholars (with or without Infants)."

It should, however, be borne in mind that the terms "infants" and "older scholars" in official language in the early years of this century refer primarily to the classification of children for purposes of payment of grants, and not to classification for purposes of instruction. On page 30 of the *Report of the Board of Education* for the year 1903–04 it is stated that the ordinary age for promotion from the Infants' Department or Class was between 7 and 8, but that there had been a steady tendency to lower this age.

(19) In 1903 the Board adopted a new policy in respect of the training of Pupil Teachers, and the Regulations for the Instruction and Training of Pupil Teachers, issued in that year provided that, as from 1st August, 1905, intending Pupil Teachers should, as a rule, receive instruction in a Secondary School up to the age of 16. The attention of Local Education Authorities was thus directed, even more than before, to the pressing need for a more generous provision of scholarships and bursaries to enable pupils from Public Elementary Schools to proceed to Secondary Schools. In the Prefatory Memorandum to the Regulations in question for 1903, the Board urged Authorities to arrange, by means

(1) The type of organisation actually adopted in specific cases was largely determined by the numbers of children in each age group and the character of the available accommodation.

of an adequate scholarship system or otherwise, that all the cleverest candidates for Pupil-Teacherships in their area, whether boys or girls, should receive a sound general education in a Secondary School for three or four years with schoolfellows intended for other careers, before they began service in any capacity in an Elementary School. The development of a system of scholarships of this kind, which had been in progress since 1902, was greatly advanced in 1907, when the so-called free place provisions were for the first time inserted in the Regulations for Secondary Schools. The effect of these Regulations was to require Secondary Schools to open a proportion of Free Places which was ordinarily 25 per cent. of the scholars admitted, without payment of fee to pupils from Elementary Schools who applied for admission, subject to the applicants passing an entrance test of attainments and efficiency such as could be approved by the Board for the school in question(1). The general result of these arrangements for the education of Pupil Teachers and for the examination of Candidates for Free Places was that teachers began to devote more attention to the instruction of the children under the age of 11. In fact, these arrangements, though primarily designed to further secondary education, indirectly helped the general trend of development in Public Elementary Schools, which was in the direction of introducing a definite break in education at the age of 11 or 12.

(20) Another manifestation of this tendency was the development of so-called Central Schools, providing an improved general education of a practical character, sometimes with a slight industrial or commercial bias, for pupils between the ages of 11 and 14 or 15. A considerable number of Central Schools of this type, both selective and non-selective, were established in London, Manchester and elsewhere after 1911(2). These schools, which were in some respects analogous to the Higher Grade Schools of the eighties or nineties, afford another example of the general tendency of the national system of elementary education since 1870 to throw up experiments in post-primary education. The development of such schools side by side with the Secondary Schools further accentuated the tendency in the larger urban areas to introduce a break in school life at the age of about 11.

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(1) See *Report of the Board of Education* for the year 1911–12, pp. 10-13.

(2) Report of Board of Education for 1911-12, p. 32 and p. 43; Ditto 1912–13, pp. 60–62.

PART III.—*The development after the passing of the Education Act of* 1918. *The organisation of Primary and Post-Primary education on the basis of a break at the age of* 11.

(21) The Education Act of 1918 enforced compulsory attendance at school up to the age of 14(1) and gave a new direction to post-primary education by providing that it should be the duty of the Local Education Authority responsible for Elementary Education to make adequate and suitable provision by means of Central Schools, Central or Special Classes, or otherwise for organising courses of advanced instruction for the older or more intelligent children, including those who remained at school beyond the age of 14. The Statute also required the Authorities to submit to the Board schemes showing their plans for developing education of various types in their areas, in future years. These and other provisions in the Act of 1918 did much indirectly to emphasise the need for a thorough reorganisation of the arrangements for the education of young children below the age of 11.

(22) From 1919 rapid progress was made with the development of elementary education on the lines contemplated in the Act of 1918. Several Authorities in the schemes for the development of education in their areas, made explicit provision for Junior Schools and Departments for children between the ages of 6–7 and 11–12. The rapid growth of Central Schools and Classes for pupils above the age of 11 or 12, directed public attention more and more to the desirability of making suitable provision for the education of children below that age. It is significant that in Circular 1350 issued on 28th January, 1925, the Board of Education pointed out that the age of 11 was increasingly recognised as " the most suitable dividing line between what may be called ' Junior ' and ' Senior ' Education." The logical outcome of the whole trend of development was clearly shown in the Consultative Committee's *Report on the Education of the Adolescent*, 1926, which set out a general scheme for post-primary education or pupils from the age of 11+. The Report pointed out that primary education should be regarded as ending at about the age of 11+, and that a second stage should then begin ending for many pupils at 16+, for some at the age of 18 or 19,

(1) The Elementary Education Act of 1900 had empowered Local Authorities to compel attendance (subject to numerous exemptions) up to the age of 14. The Education Act of 1918 abolished all existing forms of exemption from school attendance below the age of 14.

but for the majority at the age of 14+ or 15+. The principal recommendations of this Report were accepted by the Board,(1) and are now being carried out by the Local Education Authorities. Under the schemes of reorganisation drawn up by Education Authorities on the lines indicated in the *Report on the Education of the Adolescent*, arrangements are being made for the provision of post-primary education for children above the age of 11, and in many instances the older children over the age of 11 have been taken from the former "all-age" schools to selective or non-selective modern schools.

(23) Reorganisation on the lines recommended in the Consultative Committee's *Report on the Education of the Adolescent* (1926), and in the Board's Pamphlet entitled *The New Prospect in Education* (1928) is being carried out rapidly at the present time. Thus, during the year ended March 31st 1930, 1186 departments were affected by reorganisation schemes, as compared with 1103 departments in the year 1928–29, 742 departments in the year 1927–28, and 552 departments in the year 1926–27.

The main statistical facts of the present position are summarised below.

(1) The distribution of pupils in public elementary schools between the ages of eight and twelve on 31st March, 1927, 31st March, 1929, and 31st March, 1930, respectively, was as follows :—

	31st March, 1927.		31st March, 1929.		31st March, 1930.	
	Pupils.	Percentage of (v).	Pupils.	Percentage of (v).	Pupils.	Percentage of (v).
(i) Senior Departments*	25,293	1·2	33,437	1·4	37,269	1·5
(ii) Boys, Girls and Mixed Departments.	1,896,655	89·5	1,966,535	84	2,012,210	79·5
(iii) Junior Departments†	150,923	7·1	277,330	12	416,405	16·5
(iv) Infant Departments..	45,386	2·2	61,652	2·6	63,569	2·5
(v) Totals	2,118,257	—	2,338,954	—	2,529,453	—

* Senior Departments contain, for the most part, children over the age of 11; there are occasionally a small number of children who have not quite reached that age.

† Junior Departments are departments containing pupils up to the age of 11+. A considerable number of these are not restricted to children between the ages of 7 and 11, but include younger children also.

(1) Cf. *The New Prospect in Education*, issued by the Board of Education in 1928.

(2) The numbers of Departments classified as "Junior" in 1927, 1929 and 1930, respectively, were as follows:—

31st March, 1927	1,776
31st March, 1929	2,518
31st March, 1930	3,212

(3) On the 31st March, 1930, there were 665,999 pupils in the 3,212 departments classified as "Junior". The ages of these pupils were as follows:—

	Pupils aged under 8.	Pupils aged 8 to 12.	Pupils aged 12 & over.
(i) Junior Boys' Departments	10,612	52,977	38
(ii) Junior Girls' Departments	24,421	55,800	120
(iii) Junior Mixed Departments	214,088	307,628	315
Totals	249,121	416,405	473

One effect of the schemes of reorganisation has been to bring into clear relief the necessity for reconsidering the general aims and curriculum of schools for young children. It will be observed that the number of departments classified as "Junior" has increased from 1776 on March 31st, 1927, to 3212 on March 31st, 1930, and that on March 31st, 1930, about 16·5 per cent. of the total number of children in public elementary schools in England and Wales between the ages of 8 and 12 were being educated in these "Junior" Departments.

(24). It will be seen from the preceding sketch of the general development of so called Elementary Education that the conception of primary education as covering the period up to the age of 11 or 12 and comprising within it two stages—the infant stage up to the age of 6 or 7, and the upper stage of primary education between the ages of 7 and 11 or 12, only emerged very slowly, and in a rather blurred form. The idea of a Junior School or Upper Primary School for children between the ages of 6–7 and 11–12 was gradually defined by the growth, on the one hand, of Infant Schools, which can be traced back to the early decades of the last century, and on the other hand, by the various developments of Post-Primary Education thrown up by the Public Elementary Schools after 1870, which are described in some detail in Chapter I of the *Report on the Education of the Adolescent* (1926). In general,

it may be said that in the evolution of educational theory and practice in England and Wales since the beginning of the last century, the conception of the primary school for children between the ages of five and eleven, with separate organisation where possible, for those between the ages of seven and eleven, marks a new departure and brings with it new problems. To-day primary education is generally recognised as ending at about the age of eleven ; secondary education of various types is that which follows ; and the importance of considering the education of children in primary schools as something which must have a character of its own, arises from these facts.

CHAPTER II.

THE PHYSICAL DEVELOPMENT OF CHILDREN BETWEEN THE AGES OF SEVEN AND ELEVEN. (1)

(25) There is a large body of traditional and conventional views regarding the physical and mental development of young children up to the age of eleven. Such opinions represent the cumulative experience and observations of successive generations of parents, teachers, inspectors and administrators. Of late years, however, the accuracy of many of these time-honoured notions about children has been called in question by scientific investigators—both physiologists and psychologists. Much attention has been devoted to the systematic study of children at the infant stage and also at the adolescent period, but the intermediate stage between the ages of seven and eleven, up to the present, has been comparatively neglected. It therefore seems to us most important for the purpose of our present inquiry to summarise such knowledge as is available regarding the anatomy and physiology of growth and the general mental development of children at this period.

The teacher, in particular, will appreciate the significance of the inferences that may legitimately be drawn from the brief summary of the basic facts of physical and mental development which is attempted in this and the following chapter. It is true, no doubt, that the extent to which he may modify his methods of teaching and treatment to meet the needs of the individual child, will vary. But the necessity of recognising adequately the general characteristics of school children during this middle period of their growth, will justify a close study by the teacher of such physiological and psychological evidence as is available.

Slowness of Growth in Man.

(26) A comparison of the growth curve for man(2) with that for domesticated animals indicates that among the most precious heritages of man are his long period of gestation and his slow development through a prolonged childhood. In the

(1) A fuller account of the physical development of children up to the age of eleven will be found in the Memorandum by Professor H. A. Harris, printed as Appendix II, pp. 222–54.

(2) See diagram on page 225.

domestic animals there is only one " springing-up " period after birth, and the age of the suckling is rapidly followed by the age of the second dentition and of puberty. There is in their development nothing corresponding to the " first " and " second filling-out " periods in the growth of the human child, described in section 27. For instance the pup doubles his weight in the first week of life, cuts his milk teeth in the first month, the second teeth in the fourth month, and is sexually mature at the age of one year. The child grows most slowly of all the animals, continues to evolve for a long period of time, and has greatly spaced out these stages in the development which in other animals follow far more rapidly.

Our medical witnesses explained that there were at least four clearly defined types or aspects of growth in the human organism, the skeletal, the neural, the lymphoid, and the genital.

The skeletal type of development described briefly in section 27, which may be represented graphically as a growth curve, relates only to modifications in height and weight, and cannot be regarded as an adequate representation of the profound changes that take place at successive stages in the development of any given child. Almost every external linear dimension of the body, excepting the head and neck, falls under this type of growth. The skeleton as a whole, the length of the limbs, the development of the thoracic cage, of the respiratory apparatus and of the muscular system, present this general type of skeletal growth.

The neural type. The brain, the spinal cord, the eyeball and the skull display a peculiar type of growth which may be described as neural. During the first eighteen months of post-natal life these organs develop with great rapidity. When the infant has reached the age of two, his brain has attained 60 per cent. of its adult size, and by the age of seven it has almost reached adult size.

The lymphoid type. The lymphoid tissue of the body, as illustrated by the lymphatic glands, tonsils, and thymus, develops rapidly in childhood, and continues to grow at a somewhat slower rate up to puberty. During adolescence and adult life there is both an absolute and a relative decrease in the amount of lymphoid tissue. Professor Harris pointed out that this type of growth must be of profound significance

in the development of young children, in view of the extent to which the lymphoid glands in children were involved at all stages of their development whether as a result of acute disease or of chronic infections.

The genital type. A fourth type of growth is that presented by the genital organs. These organs grow but slowly in infancy, are almost stationary from the age of two to that of ten, and develop rapidly in the two years before puberty, during puberty, and at adolescence.

Our medical witness, however, stressed the fact that these four types of growth are at best only crude representations of the complexity of the processes actually involved.

The successive Cycles of General (Skeletal) Growth in Children up to the period of Adolescence.

(27) The salient facts in regard to the successive stages of growth in young children may be briefly stated as follows :—

The infant in the month before birth develops more rapidly than at any other period. During the first year of post-natal life it grows rapidly, and this stage may be described as the " first springing-up " period. Between the ages of one and five years, the infant grows more slowly and more steadily. This stage may be called the " first filling-out " period. From the age of five to that of seven, there is a " second springing-up " period. At this stage, the child increases rapidly in height, loses its milk teeth, and begins to cut its second or permanent teeth ; it becomes thin and long in the limbs, and exchanges the chubbiness of babyhood for the characteristic family type of face. At the age of seven the child's head is almost as large as it will ever be. The cutting of the second teeth is frequently accompanied by nervous disturbances, as significant in their way as those associated with the first dentition. Other features of this period are the marked development of the air *sinuses* in the face and nose, the rapid lengthening of the feet in the sixth year, and the tendency of many children to " go thin " on account of the loss of sub-cutaneous fat.

From the age of seven to that of eleven or twelve, there is a second " filling-out " period, with its characteristic of steady growth. This is followed by the " third springing-up " period

associated with puberty. The striking changes associated with the rapid growth of the organism during puberty gradually give place to the " third " and last " filling-out " period, as puberty passes into adolescence.

It will thus be seen that each of the three " springing-up " periods is in turn followed by a " filling-out " period ; each stage has its special characteristics. The normal development at all these stages is liable to be disturbed by oscillations of growth, and may be modified by diet, environmental conditions and disease. It should be mentioned that the human growth curve has been recently described by several physiologists as showing only two outstanding periods of accelerated growth, that immediately before and after birth and that of adolescence. These two stages of rapid development are superimposed upon a process of steady growth out of which the accelerations arise. This process of regular and steady growth leads in healthy children to an annual increase in weight of about 4½ lbs. (2 kilograms) between the ages of two and twelve. In this short statement, however, the older conception of three " springing-up " periods has been retained on clinical grounds which, for the present, appear to be more trustworthy. The graphical representation of the " second springing-up " period between the ages of five and seven is to a great extent obscured in many curves of increase in height and weight based on mass statistics, but when children are examined as individuals the changes in body build at the time of the onset of the second dentition are noticeable and significant. The rapid increase in height and foot length, the changes in the proportions of the limbs and the peculiar susceptibility to certain diseases, justify the retention of the older conception of three " springing-up " periods. It cannot be too strongly emphasised that curves of height and weight give but an imperfect picture of the marvellously complex mosaic of patterns of growth involved in the different systems of the human body. At any one particular moment in the child's life one or more organs may exhibit a rapidity of growth which may or may not be reflected in the development of other organs. Furthermore the ages selected in discussing the six cycles of growth should be regarded as crude landmarks only and not as strict lines of biological demarcation. The differences in the ages of onset of puberty and menstruation in particular indicate a wide variation in terms of race, social status, environment, nutrition, and family stock.

The Comparative Incidence of Certain Diseases at Successive Periods in the Child's Development.

(28) The evidence indicates that in general the three "springing-up" periods are peculiarly associated with certain diseases, and that illness occurring at any year of school age tends to leave more severe *sequelae*, if it comes within one of the "springing-up" periods, when the child's organism is already taxed to the utmost in providing the energy necessary for growth. During the first "springing-up" period to the end of the first year of post-natal life, the infant is specially prone to certain nutritional diseases, such as infantile diarrhœa, rickets, scurvy, and digestive disturbances. During the first "filling-out" stage between the ages of one and five, and to a greater extent during the second "springing-up" between the ages of five and seven, the incidence of acute infections and fevers such as measles, whooping cough, chicken-pox, scarlatina, and diphtheria is heavier than at other periods.

Some of these epidemic diseases tend to leave serious after effects. For instance whooping cough and measles, which involve the respiratory tract, may be followed by tuberculosis in the glands of the chest, and scarlet fever in children between the ages of five and seven is not infrequently followed by running ears and nephritis. Further, the milk teeth of many children, instead of being replaced by the normal process of aseptic absorption, often become infected and suppurate before they disappear, and are apt to cause digestive troubles.

During the second "filling-out" period between the ages of seven and eleven the incidence of acute infectious diseases is less heavy, but the chronic *sequelae* of preceding infections may be observed in many children, specially in the lymphoid system of the neck, chest, and abdomen. Thus the problems presented by this stage of development largely centre in the heritage of the diseases and deficiencies of the preceding years. In particular, the second teeth, defects in vision, enlarged tonsils and adenoids, disease of the middle-ear, and disease of the lymphatic glands in the chest, neck and abdomen, demand careful attention. In fact, this period of consolidation between the ages of seven and eleven may justly be regarded as affording the best opportunity for retrieving past defects in development, and preparing the organism to meet the heavy demands entailed by rapid growth during the third "springing-up" period of puberty, when the child is apt to outgrow his strength, and again becomes more liable to infectious diseases.

Our medical witnesses were disposed to think that hygienic grounds confirmed the general practice of transferring children from the infant to the primary school at about the age of seven.

The Development of the Muscular System.

(29) In the new-born child the actual muscle accounts for less than 25 per cent. of the body weight. In the young adult the muscle accounts for about 43 per cent.; the muscular system which is closely linked up with the skeletal system in respect of its type of growth develops most rapidly during the last two months of ante-natal life, and again during the latter part of puberty and adolescence. At all age periods it wastes very quickly in acute illness and starvation, and responds to feeding and exercise. During the periods of rapid growth it is a particularly sensitive recorder of harmful *stimuli*, which are apt to affect the fast-growing tissues.

The two bones forming the shoulder blade are not united until puberty. The three bones which unite to form the hip bone do not coalesce till about the age of fifteen in girls and sixteen in boys.(1) The formation of these two sets of composite bones, the shoulder blade and the hip bone, is of fundamental significance, and indicates quite clearly the age at which it is safe to subject a given individual to heavy muscular work. Our medical witnesses urged strongly that no boy or girl up to these ages should be subjected to intense or sustained muscular effort. These anatomical landmarks in the growing child are definite and precise, and cannot be disregarded without peril.

The erect attitude in itself remains a severe muscular feat since it involves the transference of the weight formerly shared equally between four limbs in the quadruped to two limbs in man. This attitude is very fatiguing and is in fact a highly unstable position, both on account of the small size of the base covered by the feet, and the high position of the centre of gravity. It was pointed out that children must not be expected to stand like soldiers at attention. The natural attitude for a child is that which he adopts when playing. He stands with feet apart and knees bent, and delights in squatting. In view of these considerations we agree with the views expressed by many of our witnesses that adequate facilities for rest should be provided for young children, especially after the mid-day meal.

(1) See Figs. VIII and IX, pp. 246 and 247.

Evidence of Arrested Skeletal Growth in Children due to Illness and Malnutrition.

(30) Recent research has shown that every severe illness, whether due to acute infection or to disease of the respiratory system, such as broncho-pneumonia, dislocates the normal metabolism and growth of the child, and that such illnesses are recorded on the bones as lines of arrested growth. When the child is ill, or starved, the epiphysial growth cartilage at the end of the shaft of the long bones ceases to proliferate, and becomes heavily calcified.(1) When growth is resumed after the removal of the harmful conditions, this line of arrested development appears as a scar on the bone (2). In the same way any disturbance of the metabolism of the body caused by disease or severe emotional shock is frequently indicated by a ridge across the finger nails. Though little is known as yet of the extent to which illness affects the growth and development of those organs which exhibit the neural, lymphoid and genital types of growth, the extent to which the skeletal system is involved is far greater than anyone has suggested in the past. Particular attention was called to the danger of urging young children to work hard before they had completely recovered from illnesses.

Attempts to Classify different Physical Types on the Basis of Variations in Body Build.

(31) Variations in general body build and in the form, size and position of the internal organs of digestion indicate that there is a real correlation between the skeleton and these organs. Our physiological witnesses informed us that several attempts had been made to classify the varying types of body build on this basis. For instance, a child of stout stocky build requires a digestive system of great motility and rapid contraction to accommodate and assimilate the comparatively large amount of food commensurate with its activity. Mills distinguishes four main types, namely, hypersthenic, sthenic, hyposthenic and asthenic. In children of the hypersthenic

(1) During the period of growth the long bones consists of a shaft (*diaphysis*) and two articular extremities (*epiphyses*) attached to the shaft by narrow plates of actively growing cartilage (*epiphysial* cartilages). When growth ceases, the epiphysial cartilages calcify and ossify, thus firmly binding the two epiphyses or ends to the diaphysis or shaft to form an adult bone.

(2) See Figs. II and III, pp. 229 and 230.

type, the radiographs show that the viscera are in a high position.(1) In weakly children of the asthenic type, the viscera are low in position, and the motility and powers of muscular contraction of the gut are small. Our medical witnesses pointed out that a child by reason of illness or starvation does not undergo any considerable changes of body build and cannot be converted from the hypersthenic type to the asthenic type. The four main types of Mills, however, admit of a further classification in terms of sub-types, and our medical witnesses thought that by appropriate feeding and exercise a given child might advance from one sub-type to a neighbouring one. There is thus a definite limit to the amount of change in physique that can be impressed upon a growing child. The existence of these different types of human organism, each consistent with good health and efficiency,(2) each with its peculiar characteristics in respect of the amount of food required, each with a tendency to react acutely to certain diseases, or even to be predisposed to them, appears to be a fundamental fact of biology. This consideration always tends to impair the significance of mass statistics, and to invalidate the results of large scale experiments. The school medical officer, realising the significance of the body build of each individual child, and the susceptibility to disease involved therein, can do much to guarantee to each child that measure of growth and physical efficiency which is the norm for his particular type.

The Development of the Brain and the Nervous System in Children up to the Age of Eleven.

(32) The brain is the part of the nervous system most closely associated with mental life, and its growth might, therefore, be expected to throw special light upon the development of the child's mind. Our physiological and psychological witnesses, however, informed us that very little is known with any certainty about the development of the brain, though various ingenious attempts have been made to correlate brain weight

(1) See diagrams, page 243.

(2) It was pointed out that such classifications of body build do not afford adequate grounds for predicting what the physical or mental qualities of any given child might be. Health and efficiency combined with unusual mental powers were often found in a body of poor physique. The available data indicated that a child of any given body build might well reach the maximum standard for his own particular type.

at successive stages of growth with body weight and to explain the significance of the development of the surface area of the human brain. Up to the age of about six or seven, the brain increases rapidly in size and weight, but after that age it grows comparatively little, though the body as a whole at the age of seven is only one-third of its adult weight. An almost imperceptible enlargement continues year by year until the age of twelve or fourteen, when it attains what may be regarded as virtually its maximal size. Thus in size and weight the brain grows more and more slowly from the age of seven onwards. The index of cerebral value recently drawn up with great care by Anthony and Coupin, which claims to present a definite picture of the "urge" of brain growth, indicates that the sixth and seventh year of a child's life, which correspond to the second "springing-up" period of skeletal growth described in section 27 above, appear to be very important years in respect of brain growth.

The architecture of the brain in the child from seven to eleven still awaits intensive study and we are acquainted only with the gross differences between the new-born and the adult. Certain facts which have emerged from the comparison of the fœtus, the new-born babe, and the adult, have an important bearing on the problems of education. In any given area of the cortex of the brain, the single layer of nerve cells in the fœtus of four months undergoes differentiation into three layers of cells. These layers are called from within outwards the *polymorphic*, or inner cell lamina, the *granular* or middle cell lamina, and the *pyramidal* or outer cell lamina. The three laminæ are distinct at birth, and it is the outer cell lamina, the last to appear, which grows most noticeably during childhood. In any form of *amentia* (1) it is the outer cell lamina which fails to develop and the middle cell lamina to a slighter extent. Further, in any form of *dementia*(2) this outer cell lamina which is the last to develop, is the first to undergo dissolution.

The fact that the order of appearance in normal growth is known, that the susceptibility of the various laminæ to maldevelopment and decay is known, that the last layer to develop is the first to suffer, combined with the fact that this

(1) *Amentia* is a condition in which the mind has failed to attain normal development, e.g. idiocy, imbecility, feeble-mindedness.

(2) *Dementia* is a condition in which the mind, having attained development, is undergoing degeneration and decay, e.g., senility, severe epilepsy.

layer increases in thickness in the normal child from birth to maturity by more than 50 per cent. indicates the need for detailed knowledge of these processes in children of school age. It is possible that the processes of development and differentiation of the laminæ of the cortex are susceptible to malnutrition and disease to a far greater extent than may at present be hazarded.

This process of differentiation of the cerebral cortex into three layers does not take place at the same time in all regions of the brain. It takes place in the visual cortex later than in the motor cortex, but before it occurs in the frontal cortex. In fact, that portion of the brain which is regarded as peculiarly associated with the higher functions is characterised by a later appearance of differentiation. The child kicks in the womb, sees when he is born, thinks later. Since the area of the brain concerned with thinking is the last to undergo differentiation, this area is brought more and more clearly into the age period when malnutrition and acute disease are most liable to register their effects.

It is highly important that the age changes in the cerebral cortex from birth to seven years should be studied more intensively. It is almost true to state that between the ages of two and eighteen years the changes are unknown. Excluding the gross changes found in aments and dements, it must be noted that, as there are wide individual variations in the degree of apparently normal cortical development, so there are wide variations in the degree of mental development in apparently normal infants and young children.[1] At present we do not know to what degree, if at all, these normal anatomical and mental variations are related, and further research is needed. In particular we want to know whether anatomical age changes are connected with the acquisition of new mental processes, and if so, to what extent ; and how far mental processes once lost or impaired can be resumed.

The Comparative Rate of Skeletal Growth in Boys and Girls respectively up to the Age of Eleven, and its bearing on educational questions.

(33) The skeletal development varies noticeably in the sexes, the development of the bones in the girl being more rapid than in the boy. The centres of ossification of the bones in the girl

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[1] See Chapter III, page 34.

appear days earlier in pre-natal life, weeks earlier in babyhood, and from one to two years earlier in childhood and puberty. Furthermore, the epiphysial union and that knitting of the bones which indicates cessation of growth at the close of adolescence, occurs earlier in the girl. We were told that these variations in development between the sexes had a bearing on the problem of co-education, since those sex differences which were frequently regarded as emerging at puberty, were really more profound and were in operation from the early stages of embryonic life. The conventional view of the period between the ages of seven and eleven as a neutral stage was thus incorrect. The latest researches indicated that the boy was in fact a boy and a girl essentially feminine from the earliest period of embryonic life. Throughout childhood the growth of the skeletal and nervous systems, and of the ductless or endocrine glands (1), in the two sexes was distinct.

The psychological evidence which is summarised in Chapter III, indicates that the mental differences between the sexes may be insignificant up to the age of eleven. It is evident, however, that the differences in physical development are very noticeable. We accordingly consider that it is desirable to warn teachers against assuming that, because boys and girls in "mixed" schools can for the most part learn similar subjects at a similar pace during this age period, they therefore have identical capacity for muscular effort and like resistance to physical fatigue. We consider it important that even at this early stage appropriate physical exercises and appropriate games should be provided for the girls. The provision of facilities for rest to which we have already alluded, are particularly desirable for girls in view of their greater liability to fatigue.

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(1) The *ductless* or *endocrine* glands do not discharge their secretion to the exterior, but give up their secretion directly to the blood or tissue-juice. Such glands are the thyroid, parathyroid, suprarenals, pituitary and pineal.

The *lymphatic* glands are masses of defensive tissue along the lymphatic vessels which return tissue-juice as lymph to the blood stream. These glands, of which the tonsil is a type, trap foreign bodies such as bacteria and are the seat of formation of some of the white blood corpuscles.

CHAPTER III.

THE MENTAL DEVELOPMENT OF CHILDREN BETWEEN THE AGES OF SEVEN AND ELEVEN (1).

(34) The data for a comprehensive psychological description of the period between the ages of seven and eleven are at present very imperfect. The mental characteristics of puberty and adolescence have been exhaustively investigated by Stanley Hall and his followers; and much work has been recently done on the periods of early and later infancy by Gesell, Piaget and others; but no psychologist has hitherto concentrated specifically on the characteristics of the growing boy or girl from the age of seven to the onset of puberty. Several of our witnesses pointed out that the full significance of the period between the ages of seven and eleven in the intellectual and emotional development of the child had hitherto not been adequately understood in the primary school. Many teachers had expected of children at this age what they cannot give, and had not afforded them adequate scope to give what they could. In fact, this stage had commonly been regarded as preparatory to some other stage rather than as constituting a definite stage of mental development. Current text-books on children either still envisage this period as a colourless transitional stage, with no marked features of its own, or else profess to find in it certain distinctive traits deduced from some theory about the general character of mental growth. The two most notable hypotheses of this character which, partly owing to their acceptance by Stanley Hall, have been reproduced in many educational text-books, and have exercised a wide influence on the views of teachers, may be described as (i) the Stratification theory, and (ii) the Recapitulation theory.

According to the former hypothesis, mental development, like physical growth, proceeds by steps or starts. Certain faculties, assumed to be almost non-existent up to a certain age, are supposed then to emerge suddenly, and to develop rapidly to a maximum. Thus, the first year of life is described as a period of sense-perception. Later infancy is regarded as

(1) A fuller account of the mental development of children up to the age of eleven will be found in the Memorandum by Professor Cyril Burt, printed as Appendix III, pp. 254-79.

the stage of motor activity and of muscular development; and the succeeding period up to the age of about eleven is supposed to be characterised by a marked development of memory, first mechanical and then logical. The faculty of reasoning is supposed not to emerge clearly until the beginning of the pubertal period. The Recapitulation theory, which, to judge from our evidence, is widely held by many teachers, may be briefly described as the doctrine that the development of the individual tends to reproduce in rapid and abbreviated form the evolution of the race. This view represents an attempt to deduce the course of psychological development from a theory based (*a*) on the supposed facts of embryological growth, and (*b*) on the argument from the biological transmission of acquired characteristics. The individual child is assumed to inherit the capacities, memories and habits of a long line of ancestors, pre-historic and civilised, and to exhibit them stage by stage in much the same order as that in which they were originally acquired.

In view of the extent to which these theories are accepted by many teachers, it is important to point out that the general results of recent psychological research tend largely to undermine such plausible generalisations. The main outlines of mental development as disclosed up to the present by the direct application of mental tests or of controlled statistical observation, are briefly described in the following sections.

The Intellectual Characteristics of Young Children.

(35) The mental capacity which is of most importance for intellectual progress, is "intelligence."(1) The available data indicate that the growth of "intelligence" is fairly uniform up to the age of twelve, but that further development virtually comes to an end about the age of sixteen. One of the most significant facts revealed by intelligence tests is the wide range of individual differences between children and its steady expansion from year to year. For instance, at the age of five children are spread out between the mental ages of about three and seven or eight, a total range of four to five years. By the age of ten this range has doubled and it probably continues to enlarge till the end of puberty.(2) Older children

(1) For a discussion of the various hypotheses regarding the nature of general intelligence see *Report of the Consultative Committee on Psychological Tests of Educable Capacity*, pages 68–71.

(2) Cf. § 68, pp. 83–85.

accordingly differ far more widely in intellectual capacity than do younger children. During the infant period pupils may be grouped together without much regard to varying degrees of mental endowment, but by the age of ten children in a single age group should if possible, be organised for teaching purposes in at least three distinct sections, and at the age of eleven the range has become so wide that a still more radical classification is required.(1)

Standardised psychological tests have been devised for many of the more important special abilities, and the results of such tests show that such special abilities rarely reveal themselves in any noticeable degree before the age of eleven. The general result of recent investigations is that all intellectual activities seem to be closely correlated with one another in children between the ages of seven and eleven, though towards puberty these inter-correlations tend to diminish. Thus, during the period between the ages of seven and eleven, one central underlying factor tends to determine the general level of the child's ability. While, therefore, there is need that older pupils should be educated in large schools where they may be freely classified according to their differing qualifications and special abilities, there is not, in the opinion of our witnesses, the same need for elaborately graded schools before the age of eleven, except for definitely defective children.

SENSORY CAPACITIES.

(36) We received also from psychological and medical witnesses some evidence bearing on the sensory capacities of children. Up to the age of eleven the essential characteristics of sense-perception show little change. These activities mature earliest, and during the stage up to the age of eleven probably change less than any other intellectual process. Nevertheless, the age norms recently obtained by the application of standardised tests indicate that the power of fine discrimination exhibits a distinct improvement in sight and hearing, the two senses which are most important for the traditional work of the primary school.

Vision. The young child's eye is an imperfect organ, naturally under-focussed and ill-adapted for close work. As the child grows up the degree of normal sight steadily improves,

(1) See also Chapter V, page 77.

and, as a rule, there is a gradual improvement in the acuity of vision. However, among a limited number of children, there is a noticeable deterioration due no doubt primarily to pathological causes, but in some instances aggravated by the conditions of work in school. In the infant school, the commonest defect is longsightedness, but in the primary school myopia becomes increasingly frequent. Defects of visual acuity are rather commoner among girls at this stage, but their colour discrimination is superior to that of boys, and colour blindness, which is comparatively frequent among boys, is very rare in girls.

Hearing. Auditory acuity is practically mature by the age of seven. In spite of increased medical attention paid to such conditions as adenoids and catarrh of the middle ear, much deafness still prevails among young children that is definitely preventable. The detection of such defects largely depends not merely on the results of necessarily brief medical examinations, but on the alertness of the teacher in watching for intermittent symptoms. Undetected visual defects in the infant school and undetected auditory defects in the primary school are responsible for much educational backwardness at a later stage.(1)

Young children up to the age of about eleven show distinct progress in the discrimination of musical pitch. The data obtained from tests of auditory discrimination suggest that inaccuracy in singing among children after the age of about seven is due more to imperfect muscular control of the voice and lack of training than to auditory incapacity. It may accordingly be concluded that pupils entering a primary school at the age of seven are fully capable of the tasks ordinarily required of them in musical instruction. It would seem that during the greater part of the primary school period, harmony does not appeal to children so much as melody, nor melody so much as rhythm.

Muscle-sense. The most recent investigations indicate that there is a steady improvement in the muscle-sense from the age of seven up to that of about twelve. All investigators have found boys superior to girls between the ages of eight and eleven. The refinement of muscle-sense is so essential a factor in the improvement of manual dexterity, that far more should be done to cultivate it at this period.

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(1) See also Chapter VI, page 86.

Touch. The sense of touch is one of the few capacities in which children are definitely superior to adults. In general the sense of touch degenerates after the age of seven though less in the case of girls than boys.

Movement. Sheer strength increases far more rapidly towards the end of the school period than at the beginning, the difference in this respect between boys and girls being small compared to that obtaining in later years. The sex difference in muscular endurance also becomes evident at this period. Though in the classrooms the sexes may be educated together at this age, in games and physical feats, sex differences cannot be ignored.(1)

The steady improvement in speed of movement from the age of six to that of eighteen with which we are familiar is most noticeable between the ages of nine and eleven.(2)

There is a noticeable improvement in dexterity from the age of five to that of nine, but thereafter the rate of improvement diminishes. There is no clear or consistent sex difference in dexterity at this stage. During the infant stage the child is learning to control the larger muscles of the trunk and limbs, but during the stage with which we are concerned he is learning to control the finer muscles, those of the eye, tongue and fingers. At this stage the aim of the curriculum should largely be the use of the eye in active observation, of the tongue in clear and expressive speech, and of the fingers in simple arts and crafts of different kinds.

THE HIGHER MENTAL CAPACITIES.

(37) Standardised tests in respect of the higher intellectual capacities have not as yet been applied on an extensive scale. The data at present available must be used with caution.

Attention. The scope of attention in young children appears to be very limited ; this is probably the main intellectual difference between children aged seven and fourteen. The young child is strikingly lacking in the power of mental organisation. Probably few teachers realise how narrow are the limits of a child's apprehension. The evidence of standardised tests indicates clearly that, if a child is to grasp a group of ideas as forming a single whole, and to understand

(1) See also Chapter II, page 31 ; Chapter V, page 77 ; Section on Physical Training and Games, page 200.

(2) Cf. § 44, p. 50.

it as conveying a systematised meaning, the number of such ideas must be very small, and the scheme according to which they are combined, extremely simple. The child's power of sustaining voluntary attention increases rapidly between the ages of seven and eleven, though in the lower classes of many schools this power tends to be over-estimated in the work still traditionally considered appropriate. If, however, the efforts of concentration be made brief but intense, it will be found that a child's intellectual penetration is far more acute than is ordinarily assumed. In the opinion of our witnesses, the matter presented to the child under the age of ten should be limited to a small number of simple facts, or to two or three short steps in reasoning, e.g., in arithmetic. If during the course of a lesson there was plenty of change and the child were allowed ample freedom to use his hands, to move about the room, if need be, and to talk, his attention would be sustained. When, however, the child reached the age of ten, he might well be practised in the power of maintaining attention by a continuous effort of will, even when interest was waning and the pleasure of novelty had worn off.

Fatigue and Weariness. The young child is comparatively free from mental fatigue up to the age of eleven ; often what the teacher assumes to be mental fatigue, is only boredom. The child's interest, but not necessarily the child's capacity, is rapidly exhausted at this stage. The lessons in which fatigue will become most quickly manifest, are arithmetic and prolonged reading and writing, in which the fine muscles of the fingers and eye are most likely to become overstrained; but this is due to physical fatigue. Our psychological witnesses accordingly urged that long sums, lengthy compositions, and dictations, and prolonged memory drill on tables and spelling, should not be set as tasks to children. At the same time it is true that the harm resulting from excessive intellectual activity is likely to be physical in origin, rather than mental, and to be due to lack of exercise and fresh air and to the maintenance of an unnatural sedentary posture.(1) Towards puberty mental and emotional factors play a more prominent part in cases of overstrain.

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(1) On the general question of the physical powers of children from seven to eleven, the experience of teachers showed that the child was relatively stronger than at any other period of school life. He had left behind him much of the liability to epidemic sickness which interfered so much with the work of the infant school, and had developed an untiring activity. The physical changes preceding the onset of adolescence were still in the future.

Memory. There is a widespread popular idea, to which earlier psychologists, such as Binet and Stanley Hall, lent the weight of their authority, that the salient characteristic of young children up to the age of eleven is their excellent mechanical memory. This view is not corroborated by the data obtained from the application of memory tests. A child's memory stands out in high relief at this period only because his higher intellectual capacities are comparatively undeveloped, or unused. The memory of a child of nine or ten years is inferior to that of the older child, especially as regards "long distance" or delayed memory. His performance in tests of "short distance" memory depends largely on his power of attention. The view held by teachers that young children delight in memory work was in the opinion of the psychologists only partially true. It is true that in the earlier stages up to the age of eight or nine, the child exhibits a singular fondness for mechanical repetition and, in the lower classes of the primary school, the teacher may legitimately take full advantage of this characteristic. But by the age of nine the mechanical method of memorising is being superseded by a more intelligent process in the childish mind. The pupil then begins to discover his powers of logical memory and is naturally anxious to exercise them to the full. The teacher should take account of this change. The older methods of instruction, which were apt to regard memory work as specially appropriate for the lower standards of the public elementary school, were partly based on an erroneous assumption. The essential thing is that proper incentives should be provided and that adequate interests should be stimulated.(1)

On the whole, the actual experience of teachers confirmed these generalisations, even though their terminology might be different and their conclusions sometimes based on erroneous assumptions. Many teacher witnesses spoke of the development of memory, when presumably they should have spoken, not of developing the memory, but of developing the habit of attention, which is necessary to the exercise of memory. The opinion, however, seemed to be general that the primary school period affords special opportunities for training the child in the use of memory. Many teachers, like the earlier psychologists to whom we have referred, spoke of the "excellent memory" of children between the ages of seven and eleven, and in this presumably they were wrong, since memory does

(1) See Chapter VII, page 93.

not specially excel at this period. They were, however, in substantial agreement with later psychologists, since they obviously regarded it only as relatively precocious. Hence many routine processes were less irksome than at a later stage, and much might be taught through the aid of mechanical memory. Reliance should be placed at this stage not only on mechanical memory, but also on that aspect of memory which is assisted by reasoning and understanding.

It is of course true that the primary school is the place where the child should acquire the mechanical elements of reading, writing and arithmetic. It would be a grave misfortune, however, were the attention of the teacher concentrated merely or even mainly on helping him to master these necessary attainments. It is essential at this, as at later ages, to give meaning and content to the child's studies by relating them to living interests; to appeal to and cultivate his imagination; and to encourage him to develop, in his small way, habits of independent thought and action. While, in short, some degree of what may be called "mechanical aptitude" is necessary, it is a means to an end, not an end in itself. It will be most valuable if it takes its place in an education designed to develop all sides of a child's personality, including his emotions, his imagination, his reasoning faculties.(1)

Imagery and Ideas.

(38) *Reproductive Imagination.* With very young children it is difficult to investigate imagery in any great detail; but certainly from the age of eight or nine, if not, indeed, at earlier ages, most children possess excellent visual memories, and visual imagery now dominates over all other forms. It would seem therefore that concrete pictorial and visible forms should be presented or suggested by teachers to children up to the age of eleven. Towards adolescence the power, or at any rate the habit of visualization tends to diminish, and the more intelligent children, partly perhaps on account of the verbal and literary character of much current instruction, are apt to think in terms of words rather than of concrete images. Our psychological witnesses accordingly urged that up to the age of eleven the school subjects and their presentation should be kept closely related to the children's concrete knowledge and immediate experience. Every effort should be

(1) See Chapter VII.

made to use the imagination, but at this stage understanding should still be based directly upon what the pupil can perceive or recollect at first-hand, usually in visual form, and not upon abstract generalisations or theoretical principles.

Constructive Imagination. In scientific as well as in literary and artistic work, the young child's imagination is fully capable of taking considerable flights, provided only that what is to be imagined can be pictured in concrete form. Our witnesses were of opinion that during this age period the exercise of creative as distinct from reproductive imagination should be cultivated ; but that when children pass from the infant school into the upper part of the primary school they should gradually be taught to bring to bear on the world of experience the constructive imagination which has been, and is being cultivated in the world of " make-believe." If at this stage contact with reality is firmly established, then the risks of morbid day-dreaming, and of over stimulated imagination, to which the adolescent is so often prone, would be largely reduced. The young child's pleasure in imagination, judiciously disciplined, should provide an inexhaustible reservoir of educational motive.

The Working Contents of the Young Child's Mind.

(39) The results of recent investigations indicate that the working contents of the average child's mind on entering the primary school are likely to be far more limited than most teachers assume.(1) During the earlier years up to the age of eleven, the greater part of the imagery with which children do their thinking has been acquired not in school, but out of it ; and, however varied or instructive the child's environment may be, many things may pass before his eyes day after day and still remain unnoticed. Evidently, therefore, at this stage it will not be sufficient to use names of common everyday things and assume that the child at once calls up a clear and concrete picture of the things for which the names stand. "The fact that children see an object a hundred times a day without acquiring consciousness of it suggests that the teacher needs to converse with children about the most obvious aspects of their day to day life before he proceeds to erect a superstructure of more intellectual knowledge."(2)

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(1) See also section on Environment, page 57.

(2) Stanley Hall—" The Contents of Children's Minds " (*Aspects of Child Life and Education*, 1907, page 1, *et seq.*)

The Child's Definitions of his own Ideas.

(40) At the primary stage the child's power of classifying the chaotic objects of his experience is rapidly improving. He no longer classifies them merely from the personal or subjective standard of their use, but tries to arrange them as elements in a universe which is at bottom orderly. Secondly, names are not at this stage clearly distinguished from the things which they designate. Before the age of eleven formal definitions are more likely to confuse than to help the pupil, and at this stage it is far better to begin a lesson or subject with a concrete problem than with an abstract definition of words and concepts.

REASONING.

(41) *Perception of Relations.* It is often assumed even among teachers, that reasoning is a power which only emerges towards the period of adolescence.(1) Recent researches have thrown some light on the process of reasoning.(2) Reasoning depends essentially upon the perception of relations, and both memory and reasoning work through associations. In memory the association between the facts is not itself made conscious or explicit; in reasoning the child not only associates two things, but also clearly perceives the relation between them. Children under the age of seven can grasp in their commonest and simplest forms relations such as those of space, quantity, similarity, contrast, and the like, provided that the material be made sufficiently simple and familiar, and adapted to their limited powers of observation. It is not, however, until a somewhat later age that the child begins to observe these relations spontaneously. His progress in this respect is easily tested by what are technically known as tests of observation and testimony.

Deductive Reasoning. Reasoning, however, depends not merely upon the perception of relations, but also upon the perception of relations between relations. This involves the power to analyse out what is to the child a complex presentation, and to grasp its organisation as a system of logically

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(1) This view was adopted by Professor Stanley Hall in his work *Adolescence* (1904).

(2) The important work of Professor Spearman and his school, lately published in his book on *Intelligence and the Principles of Cognition*, brings together the more important facts, and the theories that emerge from them.

related ideas. Recent experiments show clearly that, contrary to earlier views, all the elementary mental mechanisms required for formal reasoning are present before the child leaves the infant department. Development consists primarily in an increase in the extent and variety of the subject-matter to which these mental mechanisms can be applied, and in a development of the precision and elaboration with which they can operate.

On the whole, it is probable that with the exception of causal reasoning, most forms of deductive inference are within the range of the child between seven and eleven. Our psychological witnesses were, therefore, of opinion that from the age of seven onwards the average child could and should be taught to think scientifically, and to argue logically, subject only to the qualification that the logical steps should be extremely few, and that the scientific conceptions put before the child should be such as he could clearly grasp. At the age of seven the child was already capable of reasoning about numerical relations so long as the numbers were small and the problems simple. Problems in time seemed more difficult for pupils than equivalent problems expressed in terms of space. It was accordingly suggested that more use might with advantage be made of simple geometrical reasoning with children of the age of nine and upwards. The principle of cause and effect had, until recently, been much neglected in elementary instruction. It could be introduced first in connection with nature study and the elementary physical science of everyday life rather than in connection with geography or history.(1)

Inductive Reasoning. Inasmuch as induction is usually a more concrete form of reasoning, it is in some respects easier for the child than deduction. It seems therefore desirable that more use should be made of inductive reasoning in the earlier stages of education and that the child should be taught to apply it in everyday life.

Logical Criticism. What may be called constructive reasoning develops earlier in the child than destructive or critical reasoning, and up to the age of eleven the average child seems to remain almost blind to the more subtle forms of fallacious reasoning.(2)

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(1) See the Sections on the various branches of the curriculum, p. 150 foll.

(2) A more detailed treatment of this question is given in the section on Reasoning in Appendix III by Prof. Burt.

Suggestibility. A noticeable feature of the period between the ages of seven and eleven is the child's extreme susceptibility to "suggestion." This characteristic, which is commonly attributed to lack of reasoning power, certainly indicates that the habit of logical criticism has not yet been acquired. The ordinary child is willing to accept facts, views and methods on trust. In fact, most of his habits of life and his ideas about the world are really acquired in this way, chiefly through what is inaccurately described as "imitation." The susceptibility of the young child to suggestion is due, not so much to lack of reasoning power as to lack of organised knowledge. It is also generally a quality of his character as much as of his intellect, since he is still overawed by the prestige of those who are older and bigger than himself and who speak to him with authority. Susceptibility to suggestion is a very important factor in the education of young children; but they are certainly capable of reasoning at this age, and the development of their critical powers should be encouraged, so that, as time goes on, the child should be taught to rely more upon his independent initiative and enterprise. The evidence of inspectors and teachers as regards a child's "suggestibility" was in general agreement with the views of the psychologists. Suggestibility, they held, had a moral foundation in the ready confidence that children had in their parents and teachers. Though it could not be attributed to want of rational capacity rather than to want of organised knowledge, there was certainly in children a comparative lack of interest in reasoning, and a lack of power in logical analysis. Their thought remained concrete and particular. They were full of curiosity and enthusiasm, but their interests were active and practical. It was therefore important that the school subjects should not be isolated and labelled in separate compartments of the time-table,(1) but should be treated in close relation to the child's concrete experience.

AESTHETIC DEVELOPMENT IN CHILDREN BETWEEN THE AGES OF SEVEN AND ELEVEN.

(42) The capacity of genuine aesthetic appreciation is but little developed in the majority of children at this stage, but it is steadily growing as they approach the age of eleven. During the earliest years of childhood the nascent sense of

(1) See also Chapter VII, page 101.

beauty consists of little more than pleasurable thrills over simple sensations and perceptions, such as brightness, noise, sheer colour, rich sound, definable shape, well-marked rhythm. The advance towards the appreciation of the formal element seems to come largely through bodily activities—games, dancing, drawing, craftwork, and anything that leads to an active interest in visible or audible pattern. From his earliest years the child loves to reproduce sounds and noises, over and over again, so that they fall into a rhythmical scheme. His first active enjoyment of formal arrangement through the eye comes when he arranges toys or other light objects in a pattern. This appreciation of formal schemes may be actively encouraged when the child is half-aimlessly setting things out, or tidying up his small possessions on his dressing-table or a cupboard shelf. For the child the realization of decorative order comes most easily, when the decorative objects are movable and can be shifted at will. And in general it is chiefly through his own efforts that the child first gains an elementary insight into the artistic achievements of others. During the age of curiosity, intellectual processes begin to enter into the child's appreciation: he demands clearness, simplification, and even a vigorous and idealized statement of what his eye can grasp or recognise. This leads quickly to a critical or discriminating stage. Later, in the appreciation of music, poetry, and art of every kind, visual and auditory imagery plays an increasing part. Owing to the bookish trend of modern instruction, mental images, so concrete and so vivid in the younger child, tend to atrophy from disuse. By encouraging the child to visualize his stories, to listen for word-music as he silently reads a poem, to set down on paper with his pencil or brush the pattern-like images that rise before his mind's eye,(1) the teacher undoubtedly assists his aesthetic appreciation.

Definite experiments on aesthetic development in children have been mainly limited to studies of their drawings and their appreciation of pictures. Children of the mental age of five or six tend to draw by means of symbols; for instance, they represent the human figure by circles and other signs. This is partly, no doubt, because their vision is not yet completely focussed, but also because their technique is undeveloped. What is important from the aesthetic point of view is the sense

(1) Experiments, recently made during the drawing-lessson, suggest that the mental image is often for children the best way of arriving at simplification and at original design.

of pattern often shown in these symbolic drawings. This persists into the second stage, when the symbol is filled out with greater detail. More facts are noted, but there is still little attempt to reproduce actual appearances. A face in profile, for example, is shown with two eyes, because a man has two eyes though only one may be visible. But there is often aesthetic value in the way these facts are set down and arranged. By the age of nine or ten the child's drawings become more realistic; photographs, illustrations and picture papers have their influence, but while he gains in technique, he may lose, in his desire for photographic accuracy, the feeling for rhythm and design which is the basis of all art.

Investigations of children's preferences for pictures reveal a development in a similar direction. In the earliest years the child is mainly attracted by brightness of colour or quaintness of form. Pattern is early appreciated, e.g. the simple alternation of white and black, blue and red; but no experiments have hitherto been undertaken to discover how far the child is capable of preferring more suitable forms of balance or proportion. The appeal of subject-matter soon becomes predominant; and the child shows strong preferences for what arouse his own instinctive interests or remind him of his own pleasurable experiences. A picture of a lion, a soldier, a locomotive, or a flower, and later on a sketch that vividly tells a story he can understand—these are the things that he likes best, regardless of any photographic accuracy in the representation, or of any truly formal beauty. Efforts to get the child to appreciate artistic qualities will best succeed, if these qualities are embodied in pictures or songs referring to the child's own most intimate experiences (e.g. mother, other children, animals), and to the simple sentiments or feelings connected therewith (e.g. a mother's tenderness for her child).

In both directions the child at the earlier stages is not critical of realistic representation. This indifference to realism, together with the child's natural pleasure in vitality of representation, produces a paradoxical result: the drawings of the young child and his aesthetic preferences seem to modern artists to be often in advance of the preferences of the adult public, including at times those of his own teachers. The child's practical success, however, must not be attributed so much to conscious preference: it is the outcome of his own limitations. He is bound to simplify, and finds it easier to

arrange his lines in formal contours than to turn his pencil into a substitute for a camera. At this early stage, therefore, the teacher should beware of applying wrong criteria, and of forcing the child to criticize his lack of photographic realism instead of permitting him to revel to the full in his power to arrange his own impressions in artistic schemes or patterns. The children's own efforts through their productions in the various media should be the most potent influence in the development of a sense of beauty ; they are more potent than formal talks on beauty, or attempts to arouse prematurely the kind of appreciation which is appropriate only at a later stage. The effect of seeing and hearing beautiful things must not be depreciated.(1)

As regards the child's interest in musical form, and in the beauties of poetry and prose, less work has been done. The few studies that have hitherto been made both of children's own productions, and of their appreciation of the productions of others, indicate once again that the beginnings of aesthetic appreciation depend upon opportunities for expression in relation to the child's own instinctive interests, and that a genuine enjoyment of formal beauty in any complicated form is only possible towards the end of the primary stage.

Artistic ability and appreciation appear to depend upon capacities of two kinds. They depend to some extent upon the level of intelligence, though they are less closely correlated with it than any other subject of the school curriculum. They depend also on special aptitudes or talents. It appears that many are peculiarly lacking in such special abilities, and that in any case their interests do not show any remarkable development until the emotional stage of puberty. In particular, aesthetic appreciation through the ear comes much earlier than aesthetic appreciation through the eye.

THE EMOTIONAL QUALITIES OF CHILDREN BETWEEN THE AGES OF SEVEN AND ELEVEN.

The Normal Interests of Young Children.

(43) Psychologists and teachers are now beginning to realise that psychological theories and educational practice have in the past tended to place undue emphasis on the purely intellectual processes, which in point of fact will never function fully unless some emotional incentive be present. A child

(1) See also section on Drawing and Elementary Art, p. 192.

never works so well as when he is enthusiastically interested. It is accordingly most important that the teacher should take into account the children's own natural interests. The following are some of the problems which arise in this context and on which some light has been thrown by recent psychological investigations :—(i) How do children's interests differ from age to age ? (ii) Are there any predominant interests that are specially characteristic of the period between seven and eleven ? (iii) Are there other interests which in children of this age period have either died out or have not yet emerged, and to which therefore an appeal will be made in vain ? (iv) How can children's spontaneous interests be made the basis and motive for those higher interests which the pupils would not achieve without the teacher's aid ?

The simplest psychological theory regarding the character and emergence of these spontaneous interests is that of human instincts. The evolutionary psychologists assume that man has received from his primitive ancestors instinctive tendencies similar to those inherited by all the higher mammals and adapted primarily for wild life in a pre-civilised state. Thus the interests that appear spontaneously in the child are regarded as the result of maturing of certain inborn nervous mechanisms within the brain, not unlike those which subserve the simple reflex actions, but fuller and more complicated. In their simpler forms a large number of these instincts, together with their correlated emotions, emerge soon after birth, for example, feeding and crying out ; others, like the sex instinct, do not mature till a much later date.

Many investigations have been undertaken to discover the natural stimuli for these supposed primitive instincts, and the mode and time of their manifestation. The results of these inquiries, owing largely to the inherent difficulty of the subject, are not very conclusive ; but one fact which emerges clearly is the continuity of mental development. On the emotional side, as on the intellectual, there appear to be no sudden breaks and no abrupt transitions. Attempts have been made to ascertain approximately the order in which the different instinctive tendencies usually appear, and a fairly definite sequence seems to be discernible in many of the commoner characteristics exhibited by children, as they advance from babyhood to maturity. One school of psychologists, following the Herbartian hypothesis of "culture epochs" has attempted to institute a parallel between the order in which such interests develop in the individual and

that in which they have emerged in the evolution of the race. " Education," writes Herbert Spencer, " should reproduce in little the history of man's civilisation." This hypothesis is merely an extension of the " recapitulation theory " described above(1) and is open to the same objections.

Some of the salient features of the infant stage often persist into the upper section of the primary stage in children whose intellectual or emotional development is retarded. At this stage children's interests are at once general and subjective. Their activities show little specialisation, their interests in the outside world are personal rather than impersonal. Curiosity is perhaps the most salient characteristic of children at this stage. In games there is little genuine co-operation before the age of seven.(2) They play in the company of others but seldom with others, and as Piaget(3) has shown, their conversation among themselves evinces little real exchange of thought.

During the period of childhood, from the age of seven to that of thirteen, interests become increasingly objective and specialised. Children become less absorbed in their personal sensations and movements, and their attention is attracted more and more by definite objects, by particular occupations, and by specific branches of knowledge and problems of activity increasingly restricted and defined. During the transition from the infant stage to childhood, games of making houses, hiding, and playing with dolls appear to reach a climax, and by the age of eight are already beginning to decline. At this stage one widely spreading interest emerges rapidly into prominence and remains one of the most characteristic features of the whole period. This is the interest in making things, which displays all the characteristics of an instinctive urge. Unless ousted or crushed, this interest persists in children over the age of eleven, but assumes varying forms at different periods, though from year to year other interests emerge side by side with it and threaten ultimately to overwhelm it. It has long been recognised as an instinct of great educational significance, but our psychological witnesses suggested that even further advantage might be

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(1) Section 34, page 33.

(2) See also Section 44.

(3) J. Piaget, *Le Langage et la Pensée chez l'Enfant* (1923), pp. 68–101.

taken of it by teachers than heretofore and that as a method of instruction it should not be limited merely to the specific lessons in handwork.(1)

The young Child's Interests as revealed by Play.

(44) Much light is thrown on the interests of children between seven and eleven by play. If the infant period may be described as the stage of " solitary " play, and the adolescent stage as the period of gregarious play, the intervening epoch between the ages of seven and eleven may with justice be called the period of individualistic play. But in the upper section of the primary stage the child does not so much play with others as against them. Boys are particularly fond of games of chase at this period, and any contrivances that increase speed are especially welcome. A little later competitive games are much in favour, and the spirit of rivalry and emulation emerges. Towards the age of ten the pugnacious impulses grow stronger and stronger. In girls these instincts are less noticeable and the maternal instinct remains prominent. Towards the age of nine, healthy children take more and more to outdoor life. They are still restless and active, but owing to their increasing strength and independence they demand a wider range of movement. At this age the child seeks to explore his immediate environment further afield, and enjoys expeditions to places of interest.(2)

These new interests are largely reflected in special constructive activities. It is probable that such activities spring largely from the interest in making things, which emerges first of all as a result of the development of finer muscular control. The child is now able to handle small tools, a pocket knife or hammer and nails, and later the needle. An emotional zest accompanies such manual activities. The child's interest is not yet centred in the acquirement or the display of delicate skill. His present satisfaction springs definitely from being a maker and creator of something new, something which is his own. This basic interest in spontaneous handwork of different kinds can find an appropriate outlet in the practical activities of the primary school.(3) The evidence of practical teachers is of interest in this connection. Most children of this age, they observed, took intense delight in achievement which was visible, tangible, and above all, immediate. This desire

(1) See Section on Handicraft, page 194.
(2) See pages 121–2.
(3) See Sections on Handicraft and Drawing and Elementary Art.

could be satisfied by non-literary activities such as singing, drawing, acting, games and dancing, but it might find expression also in the recitation of prose and verse.

Junior children, they said, were little workmen, looking out for jobs to do, and largely incapable of finding them for themselves. They had not much prejudice or choice regarding any particular job, provided they could do it. They required tools, and whether such tools were figures, letters, ideas, balls, paint-brushes, muscles, or words, they were prepared to take endless pains to acquire deftness and skill in the use of them, provided always that they were connected with specific jobs. They were also actors and artists taking intense pleasure in dramatic work, and keenly interested in shape, form and colour. This type of activity was probably the natural complement of the fact that they were keen observers. Reproduction in some form, whether in speech or imitative action, or colour and line, was the natural stimulus of their power of observation.

This general view that pupils between the ages of seven and eleven were matter-of-fact and practical persons was supported by the National Union of Women Teachers. After the age of seven, they were less unquestioning, more disposed to be incredulous, from wonder tales their interest tended to pass on to true narrative history. Other witnesses were equally emphatic as to the "curiosity" of children of this age, describing it as a "ruling principle." Their matter-of-fact attitude of mind produced a spirit of inquiry into the causes of the many phenomena by which they found themselves surrounded. Curiosity, constructiveness, the love of acquisition and self-assertion, with its opposite self-submission, these were therefore the powerful instincts which had to be judiciously satisfied.

The Interests as shown by spontaneous Drawing.[1]

(45) The spontaneous drawing of young children may justly be regarded as one of the most significant manifestations of their love of constructive work. An examination of children's drawings from year to year generally shows that from the age of eight to eleven there is a remarkable improvement in skill. After the age of eleven and during adolescence appreciation becomes more marked than execution, criticism than construction. The child then, as a rule, grows shy about his own creative efforts and is content to remain more of a learner than

[1] See also the Section on Drawing and Elementary Art, page 189.

a maker. Children's spontaneous drawings reveal vividly what appeals to them most in the world of their experience. Among English children in early years the human figure is a favourite subject. Country children are fond of drawing animals, and children in urban areas of drawing mechanical vehicles. Flowers, household furniture, and at a later stage designs for dresses are favourite subjects with girls. Colour has a fascination for young children and at an early stage they will amuse themselves by inventing complicated colour patterns that grow under their hands. The evidence indicates that up to the age of nine the child is impelled to draw, not for the purpose of representing what he sees, but for the purpose of expressing his knowledge and his feelings.

The Interests revealed in spontaneous Reading.[1]

(46) The spontaneous reading of young children also throws some light on their interests. As a rule, tiny children are fond of simple poetry, beginning with nursery rhymes and advancing to poems that are short and easy but less childish. Prof. Burt found that all through the upper stage of primary education girls displayed a keener interest in poetry than did boys. By the age of nine the boys' interests in reading, as in other directions, became more and more realistic. As a rule, boys at this period care little for style, and sentiment has less attraction for them than for the girls.

It seems clear that young children exhibit distinctive and developing interests throughout the period from seven to eleven, which are different in many ways both from those emerging at the preceding stage of infancy and the later stage of adolescence, and further that these interests are to a great extent the outcome of the growing strength of certain specific instincts and emotions. Unless these emerging instincts and interests find opportunities for exercise at the time of their normal appearance and so become trained and fixed, they often atrophy from disuse and disappear. In some instances they emerge again violently at a later stage and may cause considerable trouble.

SEX DIFFERENCES ON THE INTELLECTUAL AND EMOTIONAL SIDES.

(47) Sex differences in educable capacity up to the age of eleven appear to be negligible. In the infant school sex

[1] See also the Section on English, page 158.

differences in reasoning powers are almost imperceptible, but about the age of six or seven, owing to a slight precocity in ability to read and use words, girls seem to be slightly in advance of boys. Towards the age of ten, however, boys tend to outstrip girls, but with the onset of puberty girls again develop more rapidly, though the boys subsequently overtake the girls in power of reasoning. On the emotional side, however, the interests of the boy and of the girl are moving further and further apart between the ages of seven and eleven. This difference is doubtless largely due to a difference in the degree to which common instincts are inherited by boys and girls respectively. Both sexes alike inherit instincts but in different degrees of intensity. For instance, the maternal, affectionate and submissive instincts are stronger in girls; the hunting, fighting, and assertive instincts are more marked in boys. But this slight bias is, in many instances, much increased by the effects of tradition and convention.[1]

Certain differences in detail, both emotional and intellectual, had however been observed by teacher-witnesses. The evidence of teachers in mixed primary schools indicated that up to the age of eleven boys showed rather more independence of thought and greater facility in oral expression than girls. Girls at this age frequently exhibited greater facility of expression in writing; they were capable of rather more sustained effort and often produced more painstaking work than boys. They excelled in patient and persevering attention to details, in jumping by rapid processes of intuition to presumptive conclusions. Boys, on the other hand, were inclined to be more plodding and methodical in their processes of thought, and perhaps more critical of their own conclusions; they were less diffuse and less verbose. They appeared to be more alive to the exact content of phrases and forms of statement. Many witnesses had observed that girls showed a keen desire for neatness and beauty in their work. Both boys and girls were unable at this stage of development to concentrate for long periods on set tasks, though they might concentrate on some voluntary effort. Both sexes, for some years from about the age of ten, seemed to desire to express themselves through drawing, handicraft, and other practical activities, rather than through speech. Boys, however, often appeared to be readier than girls to work with their hands, and displayed more interest in mechanical matters. In general, boys were described

[1] Cf. Consultative Committee's *Report on Differentiation of Curricula between the Sexes* (1923), pp. 97–8.

by several witnesses as being more unconventional and irresponsible than girls at this stage, though other teachers had observed that boys seemed to have more respect for rules and regulations than girls. Girls were said to be more ready to pass moral judgment, usually of blame, than boys.

Most of our witnesses did not attempt to dogmatise on the question of co-education. They were disposed to think that at this stage the question whether the sexes should be taught together or in separate departments should depend on the size of the school and on local conditions. In rural schools it was impracticable to separate the sexes, but in many urban areas the division into boys' and girls' schools worked very well and was an administrative convenience.(1) The New Education Fellowship and a number of head teachers thought that in the primary school there was little need for any noticeable differentiation of curricula as between boys and girls. A slight difference in the types of handwork done might be introduced during the later years of the primary course, the girls ordinarily taking needlework and very elementary domestic science, while the boys did woodwork, etc.

The physiological evidence, however, points to the desirability even at this early stage for different games and physical exercises for the girls, as we have already mentioned in sections 33 and 36.

THE INFLUENCE OF ENVIRONMENT ON YOUNG CHILDREN.

(48) *Influence of Poverty and its Concomitants.* Surveys carried out by means of psychological and scholastic tests reveal a marked correspondence between the distribution of poverty and the distribution of educational retardation.(2) In London, for example, the number of retarded children amounts, on an average, to 10 per cent. of the school population; in poor and overcrowded districts, however, like Lambeth, Southwark, and Rotherhithe, the number rises to nearly 20 per cent.; while in more prosperous districts like Dulwich, Lewisham and Hampstead, it sinks to barely 1 per cent. In a large representative group of retarded children, it was found that 31 per cent. came from "poor" homes, and 17 per cent. from "very poor" homes (using the terms as defined by Charles Booth); in a similar investigation carried out for the

(1) See also the section on Co-Education, p. 77.

(2) The main causes of Educational Retardation are briefly described in § 69, pp. 85–7.

City of Birmingham Education Committee, Dr. Lloyd and Prof. Burt found that among the retarded children 14 per cent. came from " poor " homes, and a further 12 per cent. from " neglected " or " very poor " homes.(1)

Our psychological witnesses told us that it is, however, not easy to separate the direct effect of bad home conditions from the results of family inheritance. Often the child's dullness is attributed to bad environment, when in point of fact it is inherited from dull parents who have drifted into that environment, and have often contributed to make it what it is. On the other hand, cases of family resemblance are often taken as examples of heredity, when the similarity is really due to the fact that brothers and sisters have been brought up under similar conditions. In the past, eugenic and biometric investigators have rightly emphasised the effects of heredity ; but there is now an increasing tendency to believe that they have under-estimated the effects of environment.(2)

Physical Effects. It is commonplace that unhealthy and insanitary conditions in the home react adversely on the child's physique, and that this in turn reduces his mental energy and alertness. Recent statutory provisions have greatly reduced the number of instances of actual hunger, and of excessive physical fatigue due to work out of school. But, although the paid employment of children is now seldom sufficient to impair their intellectual vigour, the heavy domestic duties, especially those carried out by young girls in the home, often make for listlessness and fatigue. And, it may be added, lack of sleep is far more common and even more serious than lack of food. Nor is the country child always exempt. In rural areas the conditions inside the cottage are often as close, insanitary, and unwholesome as conditions inside the tenement of an industrial town.

Much of the damage is done during early childhood before the infant comes to school. The consequences of malnutrition and the lack of sunshine and fresh air in infancy are now well recognised. The child grows up stunted and pale ; his ill-shaped features, often mistaken for stigmata of mental deficiency, show the effects of past rickets, which in addition have often left him with a curved spine, a narrow chest, and

(1) See *Report of an Investigation on Backward Children in Birmingham* (City of Birmingham Stationery Department, 1921).

(2) See Isserlis and Frances Wood, *Effect of Environment on Physique and Mentality of School Children* (Reports of Medical Research Council).

undeveloped nasal bones ; as a result he falls an easy prey to chronic catarrhal troubles, swollen glands, and the numerous infections which spread rapidly in an overcrowded home. These, in turn, are precisely the conditions which produce a general mental dullness. Of this lack of mental vitality, one of the most obvious signs is an incapacity for sustained attention, leading inevitably to poor memory, and the chronic condition of mental fatigue. The subjects of the curriculum that are chiefly penalized as a result are the more formal subjects. Much so-called laziness is really the outcome of a defence-mechanism arising out of genuine physical weakness. Often dullness can be improved by improving the child's general health—excising tonsils and adenoids, bettering the quality of his diet, and sending him to an open-air school or class in the playground or park. The special senses are often at times impaired. Short sight is common among weak and undeveloped children ; and partial deafness among those who have suffered from measles, scarlet fever, and other infectious diseases, particularly where convalescence has been neglected.

Intellectual Effects. In the poor home it is the linguistic and literary side of the child's mental equipment that suffers most. His vocabulary is limited ; his general knowledge is narrow ; he has little opportunity for reading, and his power of expressing himself in good English is inadequate. In the household where the family is small and means are adequate the child usually enters school with the foundations of education already well laid. Before he comes to the infant department, he has been encouraged to teach himself to read ; and at an early stage he is expected to write little letters to his relatives. As he grows older, he will acquire almost as much general knowledge in the home as he does in the school, and gleans almost as much information about the world and its way during leisure hours as he does from the formal lessons in the classroom. For many young children from the poorest home all this is reversed. Their parents know very little of any life except their own, and have neither the time nor the leisure to impart what little they know. The vocabulary that the child picks up is restricted to a few hundred words, most of them inaccurate, uncouth, and mispronounced, and a good many unfit for reproduction in the classroom. There is no literature that deserves the title, and the pictures are equally unworthy of their name. His universe is closed in and circumscribed by walls of brick and a pall of smoke. From one end of the year to the other he may go no further than the

nearest shops or the neighbouring recreation-ground. The country or the seaside are mere words to him, dimly suggesting some place to which cripples are sent after an accident.

The meagreness of the child's general information at the age of seven is often difficult to credit. To illustrate the very limited range of general knowledge possessed by young children living in congested urban areas it may be of interest to summarise the general results of a detailed inquiry made in 1924 among pupils of about the age of eight in the lowest standards of three elementary schools in poorer parts of London ; 46 per cent. had never to their knowledge seen any other animal than a horse, a cat, and a dog ; 16 per cent. thought that a sheep was larger than a cow ; 23 per cent. had never seen a field of grass, even in a London park ; 64 per cent. had never been in a train ; and 98 per cent. had never seen the sea. With such a mental background it is obvious that many of the statements conveyed to them by teachers or by reading-books must remain meaningless formulae with no mental picture to correspond. In the home of the prosperous artisan conditions of course are different. The income is sufficient to allow of reasonable recreation and visits to places of amusement or holiday resorts. The literary and cultural atmosphere may not be of the highest ; but, with the piano, the gramophone, the wireless, and the illustrated magazine and paper, there are opportunities for arousing the child's aesthetic interests, in however crude a form. Often, too, the father will encourage the children to take an interest in his trade, or at least to have manual and mechanical hobbies of their own. The rural child also often displays a surprising ignorance of flowers and animals.

Emotional Effects. The moral tone and the emotional atmosphere of the family life may react profoundly upon the child's work in school. If there is an attitude of slackness or irregularity within the home, the child is likely to become slack and irregular at school. The worries and even the gaieties of his parents may upset his own stability ; and, as every teacher can testify, the highly-strung child will often return to school after a long holiday, and even after a short week-end, unsettled and even over-fatigued. The key to much inattentiveness in the classroom may be found in the events of the child's daily life at home.

Outside the home, the influence of the environment may vary greatly from district to district. Some neighbourhoods are as dull and dreary as others are stimulating. If a child's

ramblings be limited to those suburban areas, where nothing is to be seen but row after row of brick-red villas, or block after block of tenement-buildings, there can be little to stir his imagination or to kindle his childish interest. In the country there is generally less occasion for hurry or bustle, and the orderly procession of the seasons has an effect which is perhaps too tranquillizing. On the other hand, the sights of the town, both by day and night, together with the innumerable opportunities for excitement in the street, are at times over-stimulating, and at times the urban child is apt to show a resulting instability in the classroom. The effect of the stimulation may appear at times to react favourably on composition, which may become more imaginative and even sensational; but it tends to react unfavourably upon lessons that demand sustained application, such as arithmetic. The influence of the cinema upon school children is too wide and complex a subject to be examined here. We may note, however, that it is towards this stage that the child as a rule first starts regular "going to the pictures," and it is during this period that the cinema, with its appeal to a primitive interest in vision and in movement, impresses the mind most strongly. Briefly, we may say that the evidence before us shows that though the direct imitation of what is witnessed on the screen is much rarer than is commonly supposed, yet the moral atmosphere evoked by the popular film, with its emphasis on what is frivolous or sensational, may undoubtedly distort the young child's view of social life. The cinema provides models and materials for all-engrossing day-dreams, and often puts forward an undesirable type of hero or heroine which the young boy or girl may choose as an ideal. Nevertheless, the poor child, cramped in a town environment, may find in the better type of film a concrete representation of facts and natural processes which cannot but enlarge his experience and give him a background of general information which will supplement his work in history, geography and literature. Efforts, however, for the improvement of the cinema call for deliberate and persistent attention.

CHAPTER IV.

THE AGE LIMITS FOR THE UPPER STAGE OF PRIMARY EDUCATION.

(49) We adhere to the view which we have stated at some length in our *Report on the Education of the Adolescent* (1926) that primary education should be regarded as ending at the age of eleven. We think that normally all children should go forward at that age to some form of secondary education. We note with regret that some authorities in their schemes for reorganisation, appear to have deliberately departed from the principle of the break at the age of eleven. For example, several urban authorities seem to contemplate the transfer of about 70 to 80 per cent. of the pupils at about the age of eleven, the remainder, consisting of the more backward pupils who have failed to reach a certain degree of attainment in a general examination in English and arithmetic, are regarded as not being capable of profiting by advanced instruction and their promotion will accordingly be retarded. We consider that proposals of this character are contrary to the whole spirit and intention of the recommendations in our Report.(1)

The change to the atmosphere of a new school at the age of eleven is particularly desirable in the interests of the more backward pupils, who should benefit greatly, not only from the change in methods of teaching and general educational environment, but also from the increased facilities for practical work and the wider social life(2) that would be open to them in the school for older pupils. We accordingly consider *that, in the interests of primary and secondary education alike, the transfer from the primary school to the secondary school*(3) *should take place some time between the ages of eleven and twelve.*(4)

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(1) See also page 77.

(2) See the section on Corporate Activities on pages 246–247 of the *Report on the Education of the Adolescent.*

(3) *i.e.*, grammar schools, and selective and non-selective modern schools.

(4) In the areas of some Welsh authorities pupils who are passing on to grammar schools, generally remain in the elementary schools till after the age of twelve. This is true both of rural, sparsely populated areas, and of most of the more populous industrial and urban districts, but the reason for it, in each case, is different. In the rural areas in Wales, it is due, in the main, to the late beginning of the country child's schooling. In the industrial areas, on the other hand, it is due to the inadequacy of school provision. Over 90 per cent. of the secondary school population in Wales are ex-Public Elementary School pupils. There is, therefore, very severe competition for admission to grammar schools and for free places, and a large proportion of those who fail to secure admission at the first examination when they are eleven years of age, remain at the Public Elementary School for a second chance a year later.

There is everything to be gained in our view from emphasising that the primary school for pupils between seven and eleven in particular possesses a distinctive aim and function of its own.(1) Our evidence indeed suggests that the process of reorganisation has already been notably successful in the establishment of the primary school as a definite unit in the educational system with an opportunity of usefulness which the smaller " all age " school, at least, did not have. In such a school the teacher is dealing with a homogeneous group, with reasonably similar educational needs, and can develop a special technique for the purpose. Nor need it be feared that the brighter pupils will suffer by being retained in the primary school till the age of eleven. If necessary, an additional class or section for them can be provided at the top of the school, and they can always be afforded opportunity for individual study. They will be less likely to mark time than if transferred to a school for older pupils at an earlier age ; it will be better for the more nervous and highly strung, and for the more precocious who are liable to " slow up " afterwards ; and it will be better for the " modern " schools because the transfer of pupils at eleven, with a high level of attainment, will give an upward trend to the teaching on the literary " side," and probably on other " sides " of the school. The retention of these pupils in the primary school until they are of an age to take part in the games, in the school societies, and in the practical work of the " modern " school, appears therefore to be a necessity in the interests of the pupils themselves and in the interests of the school.

It was urged both by administrators and teachers that an exception might be made in favour of those pupils who, at about the age of ten, were proceeding direct to grammar schools. Having in view the existing organisation for the more academic type of education given in grammar schools, and the wide age range of the schools, we do not dissent from this suggestion.

To one administrative feature of the present arrangements for the admission of pupils from the primary schools to grammar schools, we wish, however, to call special attention. Some witnesses, in advocating the definite age break at eleven, spoke of the transfer to modern schools of some pupils at an earlier age as being liable to cause two breaks between the ages of nine and eleven. They said that these brighter pupils thus promoted would probably compete for " free places " from the modern school, and so pass on in a short time to grammar

(1) See also § 59, pp. 70–71.

schools. We cannot express too strongly our view that where an annual examination is held for the purpose, *inter alia*, of awarding scholarships to grammar schools, such a test should take place in the primary school. It would intolerably disturb the ordered curriculum of a modern school if pupils in the lower forms were shortly entering for a " free place " examination. The possible transfer of certain pupils from a modern school to a grammar school, or *vice versa*, at a later date, is another matter. For this some different procedure will be required.(1)

EXISTING ARRANGEMENTS FOR THE EDUCATION OF CHILDREN UP TO THE AGE OF ELEVEN.

(50) It is very difficult to give from the available data, statistical and otherwise, any clear and coherent picture of the existing arrangements in England and Wales for the education of young children up to the age of eleven. All over the country, public elementary schools are being gradually reorganised on the lines indicated in our *Report on the Education of the Adolescent*, that is to say, on the basis of a break for all children at the age of eleven. The difficulties which confront urban education authorities in carrying out this policy are not so grave as those encountered by county authorities, especially in areas which are mainly agricultural. In general, it may be said that in urban areas, apart from the surviving " all age " boys', girls' and " mixed " schools for all pupils above the infant stage, authorities tend to adopt one of the following types of organisation for the education of children up to the age of eleven :—

(i) Separate infant schools or departments for children up to the age of seven or eight, from which the pupils pass into distinct schools organised either as mixed schools or as schools for boys and girls respectively. There is reason to believe that in a certain number of urban areas the break between the so-called junior and infant departments and the senior department is still fixed at the age of about nine in accordance with the recommendation in paragraph 6 of the Board's Circular 1350 of January 28th, 1925, which has since been withdrawn. We consider that seven should be the normal age of transfer, but that this should not be regarded as so definite an age break as in the case of the upper age limit of eleven. Arrangements might be made for the earlier promotion

(1) See *Report on the Education of the Adolescent* (1926), §§ 97 and 156 and Recommendation No. 17, p. 177.

and the later retention of exceptional children. We think, however, that eight is the latest age at which children should be retained in the infant department.

(ii) Combined infant and "junior" schools for pupils between the ages of five and eleven.

(iii) "Junior" schools containing infant classes, but also receiving entrants at the age of seven or even eight from contributory infant schools.

It should be pointed out that these different forms of organisation for the education of young children up to the age of about eleven in urban areas are often based, not so much on any preconceived educational theory as to the merits or demerits of separate departments for infants and "juniors," as on the character of the available school accommodation, the number of children of infant and "junior" ages, and the necessity of providing for young children suitable accommodation within a reasonable distance of their homes.

In the rural portions of county areas the large schools usually contain an infant department under a separate head teacher. Most country schools, however, are combined schools either of infants and "mixed," or, where reorganisation has already taken place, of infants and "juniors." The infant class or division is placed under a separate teacher and frequently contains children up to eight years of age. In the very small schools with one teacher only, an attempt is usually made to group the children in at least three sections, the lowest consisting of children of the ages of five and six, the next of children of the ages of seven and eight, and the highest of children between the ages of nine and eleven.

THE ORGANISATION OF CHILDREN UP TO THE AGE OF ELEVEN IN SEPARATE INFANT SCHOOLS AND PRIMARY SCHOOLS.

(51) In the matter of organisation for children under the age of eleven, the only acutely controversial point is whether schools for children up to the age of seven and for children from the age of seven to that of eleven should be separate schools, or whether adequate provision might not be made in the same school for children between the ages of five and eleven. We have shown in chapter I that the broad distinction between infants and older children or "seniors" emerged at a very early stage in the development of elementary schools in England and Wales, and was accepted almost as axiomatic by many of the urban school boards after the passing of the

Education Act of 1870. Even in the smaller rural schools there was generally an implicit distinction between the infant class or division and that for the older children, who are often described as the "seniors." Thus hitherto the majority of children in public elementary schools, at any rate in urban areas, have had one break in their education at about the age of seven or eight. The fact that there will now in future be a definite break at the end of the primary stage at eleven, has caused a number of educational administrators and teachers to reconsider the earlier break at about the age of seven, on the ground that it is probably undesirable that a child should have two definite breaks in the course of its education. It will therefore be convenient at this stage to summarise briefly the arguments for and against the provision of combined schools. In the great majority of rural schools the question does not arise, since in practice it is often only possible to organise separate departments or schools for infants and children over the age of seven in populous areas. Those who advocate combined schools defend them on the following grounds:—(i) Any break in a young child's school life is likely to retard progress and should, if possible, be avoided; (ii) there is no cogent psychological evidence pointing to the desirability of a break between the infant and upper stages of primary education, since no abrupt change in mental development takes place at about the age of seven, and the mental growth of the child between the ages of five and eleven is gradual and continuous; (iii) past experience tends to show that separate "junior" schools are unsatisfactory; (iv) it is highly desirable that the transition from the infant department to the department for pupils between the ages of seven and eleven should not be too abrupt; (v) if infants and children over the age of seven be organised in separate schools, the infant school will often be too small.

(52) We will deal first with the argument that any break in the child's school life is likely to retard progress. On a first view, there seem to be some disadvantages in a break at the age of seven since there may be a certain amount of dislocation in the child's progress on passing from one type of school to another, due to the sudden change in the methods of teaching causing some mental and emotional disturbance. Several of our witnesses pointed out that the Board, in their Circular of January 28th, 1925 (No. 1350, which has since been withdrawn) had recognised the disadvantages of the double break in the school life and had recommended departments

for children between the ages of five and eleven in large schools. In the *New Prospect in Education* (1928) the Board abandoned that position and stated that, in the light of further experience it was not possible to press this preference, and that the balance of advantage would now usually be regarded as lying with an organisation providing separate successive departments for infants and "juniors." It is no doubt true that the reasons for the break at the age of about seven are not so cogent as are those for the break at the age of eleven, but the assumption that continuity of method and treatment is necessarily sacrificed by the establishment of separate departments for infants and children between seven and eleven respectively does not seem to be well founded, provided that, as we recommend elsewhere, changes in teaching methods are made gradually.(1)

(53) Next we will deal with the argument that there is no cogent psychological evidence pointing to the desirability of a break between the infant and the upper stage of primary education, since the mental growth of the child between the ages of five and eleven is gradual and continuous. The psychological data which we have summarised in chapter III, indicate that mental growth on the intellectual and emotional sides is a gradual and continuous process, and that there are no sudden breaks and no abrupt transitions in the intellectual and emotional development of young children up to about the age of eleven. It is therefore impossible on psychological grounds alone to make out so strong a case for a break at the age of about seven, as for the later break at the age of about eleven. On the other hand there is strong reason for regarding the age period between seven and eleven as a distinct stage in the physical development of the normal child (2); and even on psychological grounds a fairly strong case can be established against large schools for pupils between the ages of five and eleven. As is shown in chapter III(3) there is a wide range of individual difference in capacity between children that tends to expand steadily from year to year; and it might be urged that it is much more difficult to make satisfactory provision for teaching them in a combined school than in two distinct departments.

The psychological evidence indicates that what is really injurious to a sensitive child is an abrupt change in methods

(1) See §§ 57 and 58.
(2) See Chapter II *passim*.
(3) Page 34.

of teaching, in discipline and in general environment. In a well planned school for pupils between the ages of seven and eleven, however, the transition need not be more abrupt than would be the change from class to class in a combined school. We agree with the County Councils Association that there should not be an inflexible rule for separating infants and children over the age of seven, and for determining the size of infant departments. But when the difference in the general habits of mind and emotional interests of children over the age of seven and of infants respectively is considered, as well as the range of mental capacity in children between the ages of five and eleven, there appears to be a good case even from the psychological point of view for the organisation of separate departments, if the numbers justify it, provided that the transition in teaching methods and general discipline is made as smooth and easy as possible for the pupils. We discuss this point further in Section 58.

(54) Those who adduce the argument that past experience has shown that the separate " junior " school is a failure are undoubtedly thinking of the so-called junior school which came into existence before the principle of the break at eleven recommended in our *Report on the Education of the Adolescent* was generally adopted. For instance, as we have shown in chapter I, a form of organisation was adopted in some public elementary schools(1) consisting of an infant department for children up to the age of about seven, " junior " departments for children between the ages of seven and nine, and " senior " departments for all children over nine. In some instances these earlier departments retained pupils to the age of ten, but even then this only provided a three years' course, and most of them appear to have kept their pupils for about two years only. Such schools were comparative failures for several reasons. They were frequently used to relieve the pressure upon other departments; it was very difficult to plan for them a curriculum which had within itself a sufficiently definite educational objective, and they were often merely schools in which children passed one, two or three years in their way from the infant school to the " senior " stage. It is therefore, in our view, misleading to institute any comparison between these older types of " junior " school and the new primary school, providing a course of four years for pupils between the ages of seven and eleven.

(1) See §§ 13, 14 and 16.

The new school will have a reasonably long course. It will be filled with pupils systematically drawn from one or several infant schools, and it will have a definite objective.

(55) There was general agreement among our witnesses that it was most desirable that the methods of teaching employed in the better infant schools should be shaded off gradually. The advocates of the combined school for pupils between the ages of five and eleven urged that there was a real danger that the separate school, instead of carrying on the work of the infant school in a sympathetic spirit and making the fullest use of the skill acquired by the best infant school teachers in the training and instruction of young children, might become merely a department in which the elements of formal knowledge were imparted. We are convinced from the emphasis laid on this consideration by the great majority of our witnesses, speaking from different points of view, that there is a certain danger in cases where separate schools for infants and children over the age of seven have been established, that the transition may, in some instances, be too abrupt. While admitting, however, that it may be easier to solve this particular problem in a primary school taking pupils from five to eleven, we think that, if the separate school be adequately staffed, and teachers acquainted with the best modern methods of teaching young children placed in charge of the lower classes, the difficulty would largely disappear. (1) It might be urged, on the other hand, that if the "junior" school is to be regarded merely as an extension of the infant school, and if one of its main functions is to conserve infant school methods and atmosphere, at any rate for its younger pupils, it may well fail to attain its proper objective. If the head teacher of the combined school were a person specially interested in modern infant school methods, she might be apt to look at older children from the standpoint of the infants. The classes for children between seven and eleven, whether they be organised as a separate school or form part of a combined school, have a function of their own to discharge. Without sacrificing any of the excellent work done in the infant school, they have, at the same time, to educate children in such a way that they will be fit at the age of eleven to benefit from the work and the life of the next stage.

There is some force in the consideration urged by several witnesses that in a large primary school for pupils between the ages of five and eleven the wide age-range would often

(1) See § 87, page 107.

tend to make the later stages of the course the main objective of the school and that the shadow of a free place examination might fall even across the path of the younger children. Lastly, it might be urged that, since the basis of the whole argument is the excellent work at present done in some infant schools, a proper appreciation of that work would lead to the preservation of the infant school as a separate entity, and that it is desirable, where the numbers of children render this course possible, to organise the infants separately.

(56) Finally we deal with the argument that if infants and children over the age of seven are organised in separate schools, the infant school will often be too small. The age range in the infant school is about two and a half years, and as the birth rate has been falling for some time past, the size of many separate infant schools is smaller than in former years. This diminution is felt most in urban areas and these are the areas in which nursery school facilities are particularly desirable. Any decline in school population with the setting free of some classrooms might afford opportunities for development in this direction. Only a few nursery schools have been established as separate institutions. Nursery classes attached to infant schools have been adopted as an alternative. Such nursery classes form part of a separate infant school, but it is difficult to envisage a primary school with nursery classes having a total age range of about eight to nine years (2 to 11).

From the point of view of the interests of the infants, the following considerations might be urged in favour of separate infant schools :—(i) The training given in the best infant schools is largely dependent upon atmosphere, and it is found in practice that this atmosphere is difficult to maintain when older children are present ; (ii) the difficulty of a common playground for infants and children over seven, in cases where the playground accommodation is so limited as to necessitate all children using it at the same time, is serious, as even under the most careful arrangements the older children are apt to be rather self-assertive and inclined to bully the little children ; (iii) the older children in a good infant school, especially about the age of seven, often display a remarkable spirit of independence and initiative, owing to the fact that they are in the top class. In a primary school containing both younger and older children they could hardly occupy such a position and the valuable ethical effects of this arrangement would be lost.

(57) We think that a very strong case can be established both from the point of view of the physical and mental development of young children and on general educational and administrative grounds for the organisation of infants and children over the age of seven in distinct departments or schools, where the numbers justify such an arrangement. *We accordingly recommend that, in areas where it is possible, there should be separate schools for children under the age of seven.*

We wholly agree with the view put forward by several of the great organisations of teachers and administrators, and notably by the National Union of Teachers, to the effect that the "primary school should be regarded as a unit in organisation with its own problems and technique. It was naturally dependent on the infant school, and must lead to the secondary school. Both these would affect to some extent both methods and courses, but should not be permitted to determine either." In other words, however much the stage between seven and eleven be regarded as an independent entity, it must be recognised that it has intimate points of connection both with the infant stage and with the secondary stage of education.

As regards schools in the rural parts of county areas, we fully recognise that in most country schools at the present time it would be economically impracticable, owing to the small numbers of children,[1] to establish separate departments for pupils between the ages of seven and eleven. *We think, however, that in all primary schools containing children up to the age of eleven, including even small rural schools, there should be a well defined line of demarcation between the younger and older children. To this end, we recommend that, wherever possible, the infants should be placed under the care of a mistress with special responsibility and special knowledge of modern methods appropriate to this stage.* The teacher or teachers in charge of the pupils above the infant stage, would thus be set free to study the special needs of the children between the ages of seven and eleven, and to plan appropriate courses of instruction for them.

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[1] Official statistics show that in 1929 there were 12,085 public elementary school departments in the rural parts of county areas in England and Wales, and that of this number 8,974 departments had an average attendance of not more than 100. The average size of a department in these rural parts was 81. See also footnote on p. 110.

THE PSYCHOLOGICAL EVIDENCE BEARING ON THE MOST SUITABLE AGE FOR TRANSFERRING PUPILS FROM THE INFANT SCHOOL TO THE UPPER STAGE OF PRIMARY EDUCATION.

(58) Earlier psychologists, following a popular tradition, divided childhood into three periods of seven years each, making the breaks at the ages of seven, fourteen, and twenty-one, respectively; but the result of all recent experimental work indicates that though in the mental growth of any one individual child there may be periods of rapid progress and periods of stagnation, the mental development of children taken in the mass yields an almost straight line curve until about the age of twelve. Our psychological witnesses stated that it is certain that at the age of seven there is no change or crisis which in any way corresponds to the crisis or change of puberty. Nevertheless, a child of the age of four or five differs very noticeably from a child of the age of eight or nine. This difference is not merely one of amount of intelligence, it is also a difference of quality or kind. For instance, children of the age of eight or nine are noticeably less self-centred—new capacities have emerged, fresh interests have been acquired, and a different type of education is accordingly required for them. Nevertheless, the transition is gradual and the exact date for transference cannot be determined on purely psychological grounds. In view of the noticeable difference which at present obtains between the comparatively free methods of teaching in vogue in infant schools, in which the instruction largely follows the "play way," and the more formal and intellectual methods of instruction employed in the upper stage of primary education, it is manifestly desirable not to transfer children from the infant department until they are ready to adapt themselves to a more formal type of instruction. The available evidence points to the mental age of seven to seven and a half years as being the normal age of transfer. Some students of child life have argued in favour of an earlier date for transfer. For example, Froebel and Montessori both believed that a sharp transition in mental growth might be observed about the age of five or six. Under existing conditions, however, the age of seven seems to be the earliest age at which the ordinary child can with advantage be transferred to the upper stage of primary education. From the psychological point of view, any sharp change in teaching methods is injurious to a sensitive child and may lead to

depression, timidity, nervousness, nightmare, and even open rebellion. If, however, the existing difference between the teaching methods in vogue in the two schools be carefully shaded off, there is no reason based on psychology why promotion should not be made at about the age of seven instead of the later age of eight as some recent educationists have suggested. In this connection it was pointed out that even though the more formal work in the upper stage of primary education is now to some extent anticipated in the top class of many infant schools (commonly called the standard class or "standard I") yet the teaching methods employed in the lower classes of the school for children between seven and eleven should not diverge abruptly from those in the top class of the infant school. Whatever age be chosen for the transference, the psychologist would plead strongly for a flexible interpretation. Our psychological witnesses urged that promotion should be determined by the mental age rather than the chronological age, though for administrative reasons a compromise might possibly have to be effected.(1) The actual development in capacity and character of the individual child was more important than the mere date of his birthday for determining the time for his transfer to the upper stage of primary education.

THE GENERAL AIM AND SCOPE OF THE PRIMARY SCHOOL.

(59) It is true indeed that the process of education, from the age of five to the end of the secondary stage, should be envisaged as a coherent whole, that there should be no sharp division between the infant, "junior," and post-primary stages, and that the transition from any one stage to the succeeding stage should be as smooth and gradual as possible. The upper stage of primary education, though intimately connected with the infant stage and also with the secondary stage, should nevertheless be regarded as forming a well-marked period in the physical and mental development of the average child, demanding special treatment and special methods of teaching. Both the infant school and the different types of secondary school will, to some extent, affect courses and methods of teaching in the upper section of the primary school, but they should not be permitted to determine either. The primary school should not, therefore, be regarded merely as a preparatory department for the subsequent stage, and

(1) See also § 63, p. 74.

the courses should be planned and conditioned, not mainly by the supposed requirements of the secondary stage, nor by the exigencies of an examination at the age of eleven, but by the needs of the child at that particular phase in his physical and mental development. The primary school should afford time and scope for general development in preparation for the more varied forms of teaching that will be adapted to the special abilities and aptitudes of the pupils at a later age. It should arouse in the pupil a keen interest in the things of the mind and in general culture, fix certain habits, and develop a reasonable degree of self-confidence, together with a social or team-spirit.(1)

CO-OPERATION BETWEEN THE TWO SECTIONS OF THE PRIMARY SCHOOL.

(60) There was a general agreement among our witnesses *that in all cases where there were separate schools for children below the age of seven and for children above that age, a close connection should be maintained between both schools.* Teachers in the infant school should keep in touch with the teachers of the upper section of the primary school; and it seems highly desirable, as many teachers suggested, *that frequent staff meetings should be held attended by both sets of teachers.*

CO-OPERATION BETWEEN PRIMARY SCHOOLS AND SECONDARY SCHOOLS OF DIFFERENT TYPES.

(61) It is most important *that the teachers in all types of secondary school should keep in close touch with the teachers of the contributory primary schools and departments.* The Association of Education Committees and the Association of Municipal Corporations urged that conferences between teachers in primary schools and those in secondary schools of different types should be arranged periodically on the basis of small geographical areas. We endorse this, and suggest that local education authorities should take steps, as many of them have already done, to promote the holding of such conferences. Adequate co-operation between the different types of school is impossible without periodical conferences between the teachers of the various types of school, meeting equally on common ground. These conferences might be of different kinds:—(*a*) Conferences of infant teachers with

(1) Cf. Chapter VII, *passim*.

teachers in the upper section of the primary school; (*b*) conferences of primary school teachers with those in secondary schools; (*c*) conferences of teachers from all types of school. Such conferences might, where it is considered desirable, be attended by officials of the local education authorities and, as occasion arises, by H.M. Inspectors. For purposes of co-ordination these conferences might also include at times members of training college staffs directly concerned with teaching methods. We also agree with the suggestion made by several of our witnesses that co-operation between primary schools and secondary schools might be further promoted if the teachers in the upper section of primary schools, both head teachers and assistant teachers, were from time to time afforded opportunities of seeing the work done in other types of school and *vice versa*.

CHAPTER V.

THE INTERNAL ORGANISATION OF PRIMARY SCHOOLS.

(62) There was general agreement among our witnesses that the results of the reorganisation, which has been in progress during the last few years, were no less evident in the primary than in the secondary stage of education. There seems to be no doubt that the bringing together of the younger children in one school, and the better classification thereby attained, has been highly beneficial. Where the primary school has once been established as a distinct educational unit, it receives a wholesome stimulus and a definite aim. This is largely due to the fact that the teaching which these younger pupils are now receiving is better adapted to the needs of their age. In schools which have not yet been reorganised, there have been in some cases difficulties in meeting the needs of the younger children, more especially in rural areas where "all-age" schools are small. This obtains because the teachers are concerned with children of the age of fourteen as well as with those of the age of eleven, and are not in consequence free to give adequate attention to the special needs of the pupils between the ages of seven and eleven. In the reorganised schools, primary as well as secondary, the teachers are more free to concentrate their attention on the needs of children who are nearly alike in age, capacity, and attainment.

The function of the primary school for children between the ages of five and eleven, with its two well-marked stages—one extending up to the age of seven, and the other comprising the period between the ages of seven and eleven—may from one point of view be regarded as that of filling the place which for some decades after 1870 was filled by the public elementary school. The primary school in the rural parts of county areas will not, even though the children over the age of eleven go to centrally situated modern schools, simply be a school which has been decapitated. It is not a mere preparatory department dominated by the requirements of the modern school for older pupils. So far from being "an elongated Infants' School or a truncated Senior School" (1),

(1) *Report of the Departmental Committee on the Training of Rural Teachers* (1929), Section 108.

the primary school, organised as a distinct unit for pupils between the ages of five and eleven, is set free to concentrate on discharging its own proper function and developing its own technique. It has already acquired a character and identity of its own, as the teachers have discovered the possibilities of grouping children appropriately and giving them individual attention. In chapter IV, section 57, we recommended that in areas where it is possible there should be separate schools for children under the age of seven. It is especially important to make adequate provision on the one hand for the brilliant children who in the former " all-age " school would have been in the top classes (standards VI or VII) at the age of ten or eleven, and on the other hand for the retarded pupils.

THE PRIMARY STAGE AS ONE CONTINUOUS PROCESS.

(63) The transition between the two sections of primary education is still often too marked, both in methods of teaching and discipline, and in the character of the courses of study. We would accordingly urge that the courses of teaching and the general organisation for the two sections of primary education, whether carried on in two schools, or, as is generally the case in rural areas, in one school, should always take into account the points of contact between them.

We regard it as important that the transition from the general treatment and the methods of teaching in use in the infant school to those in use in the next stage of primary education should be easy and gradual, and that the teachers of the lower classes in the latter should have some knowledge of infant school methods.(1) *Under these conditions there is, in our opinion, no good reason why promotion from the infant school should not be made between the ages of seven and eight.* It is obvious that any marked discontinuity in methods of teaching, discipline, and general treatment in the lower classes of the school for pupils between the ages of seven and eleven may seriously delay the progress even of gifted pupils, who indeed are often peculiarly sensitive to such changes. Our witnesses laid particular stress on this point. In some schools the head teachers and their staffs visit the infant schools in order to see the children who are shortly to be promoted. They talk with them, and afterwards discuss their tastes, aptitudes and attainments with the teachers of the infant schools. In this

(1) See also § 87, p. 107.

way the teachers in the upper section of the primary school are able to do much to make the process of transition as smooth and easy as possible for the entrants from the infant school. We would urge that further recourse might be had to this and similar arrangements for maintaining close contact between the two sections of the primary school.(1)

The Medical Officers of Schools Association called attention to the desirability of adopting in the lower classes freer methods of teaching and discipline more resembling those in use in the infant school, and of allocating more time to " out-of-door " studies and rest.(2) It appears from our evidence that several schools have been organised on these lines with satisfactory results.

THE SIZE OF CLASSES IN PRIMARY SCHOOLS.

(64) All the teacher witnesses stressed the point that the primary school would discover even among its normal children a fairly wide range of ability, and between the brightest and the dullest children in any one class a considerable difference of mental calibre. The results of a comprehensive survey of children in one large urban area showed that even if the " more retarded" children were transferred to a "special" school, there would still remain a number of children at the chronological age of ten with mental ages of seven and eight, and also a number of children of the age of ten with a mental age of thirteen and fourteen.(3) In any single school the range of difference in mental capacity might, and in most cases would be narrower. On the other hand if a school drew its pupils from a mixed area such as one which fronts on to a good district and backs on to a slum, 10 to 20 per cent. of the children might be more than a year below, and 10 to 20 per cent. more than a year in advance of the average level.

If the claims of the individual child to suitable treatment and attention are to be met, it is essential that the classes should be reasonably small. A class of say 50 children must mean stereotyped instruction and mass discipline, and inability on the part of the teacher to deal appropriately with the individual child. Particular emphasis was laid on this point by the various educational organisations. For instance,

(1) See also Chapter IV, Section 60.

(2) Cf. pp. 27, 32 and 201.

(3) Cf. § 35, p. 34, and § 68, p. 83.

the National Federation of Class Teachers contended that no class should ever exceed 40 scholars on the roll. The National Union of Teachers pointed out that "if in urban schools, 50 children continued to be regarded as a not unsuitable unit in teaching, it was scarcely possible to hope for any effective advance in technique in Junior Schools. Classification in groups presented certain advantages, but there was a limit to the number of groups which one teacher could superintend successfully." In substance, the National Union of Teachers adhered to the view which it had expressed recently(1) that classes in "Junior Schools," like those in "Senior Schools," should be limited to 40. The National Association of Inspectors of Schools and Educational Organisers urged that the greatest single factor in education was, or should be, the personality of the teacher, since schools were neither made nor marred by curricula. Classes of appropriate size were just as desirable and as important for "junior" as for "senior" pupils. This body thought, however, that "junior" classes might be slightly larger than senior classes, and that at present a suitable size was 40 to 44 for "juniors" and 35 to 40 for "seniors." The London Teachers Association considered that large classes were as detrimental in the "junior" as in the "senior" school. The Association considered that no class in the "junior" school should exceed 35 on the roll, and that the staffing of "junior" schools should approximate to that of "senior" schools. The New Education Fellowship also pressed strongly for a reduction of classes in "junior" schools to a maximum of 35.

We discuss in chapter VIII the problem of the staffing of self-contained primary schools. At this point we will only say that, having regard to the great importance of the foundation work that must be done in the upper stage of primary education and the difficulties of training young children to study independently and to do individual and group work in the various branches of the curriculum, we agree with the majority of our witnesses in holding that the size of classes in primary schools is one of the most urgent problems to be faced by educational administrators. It would be impossible to put into operation many of the suggestions which we make in this report, if large classes be retained in primary schools.

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(1) *The Hadow Report and after* (1928), pages 45 and 46.

THE QUESTION OF CO-EDUCATION.

(65) *We think that there is no valid objection on general sociological and educational grounds to "mixed" primary schools, provided that due regard be paid to the differing needs of the boys and girls in the matter of games and physical exercises.* In this context it is of interest to note that of the 2,518 departments in England and Wales classified as "junior" 2,265 are organised as "mixed" departments.(1) We think, however, that it is most undesirable to attempt to lay down any rigid rules on the subject of co-education at this age. In populous areas containing large numbers of young children it may often be found advisable to organise separate schools for boys and for girls. Such schools have worked well in many urban areas and have been found convenient for administrative reasons.(2)

THE INTERNAL ORGANISATION IN SCHOOLS WHICH CONTAIN PUPILS BETWEEN THE AGES OF SEVEN AND ELEVEN.

(66) The internal organisation of a primary school must clearly be, to a large extent, conditioned by the available staff, the available classroom accommodation, the number of pupils, and the proportion of retarded children. It is obvious, therefore, that it is only possible to describe a few types of classification which are of general application. The break at the age of eleven has rendered possible a more thorough classification of children. *It is important that this opportunity should be turned to the fullest account.* One great advantage of the self-contained primary school is that the teachers have special opportunities for making a suitable classification of the children according to their natural gifts and abilities. On the one hand, immediate treatment of an appropriate character can be provided for retarded children, and on the other hand, suitable arrangements may be made for specially bright children. If the school is adequately staffed, the teachers will be able to obtain a full knowledge of the character and capacity of each individual child. In view of the varying attainments of children it is specially important that there should be small classes or groups. Where classes are rather large, the task of the teacher will be lightened if the pupils are carefully classified according to their capacity. In general we agree with our psychological witnesses in thinking that in

(1) *Statistics of Public Education for* 1928-29, Table 13.

(2) See also § 47, p. 54.

very large primary schools there might, wherever possible, be a triple track system of organisation, viz.: a series of " A " classes or groups for the bright children, and a series of smaller " C " classes or groups to include retarded children, both series being parallel to the ordinary series of " B " classes or groups for the average children.(1). Such general groupings are not incompatible with re-classification for special purposes. It is of course essential that any improvement or otherwise in the capacity of a pupil should be provided for by early and easy transfer between the different parallel classes or sets. In the smaller schools there might well be at least two classes or sets for each age group. It seems desirable that there should be no attempt at a rigid classification of the entrants from the infant school.(2) In this connection our psychological witnesses stressed the desirability of classifying by capacity rather than by attainments; the method of assessing ability at this age by a simple test in reading and calculation might yield misleading results, since, for example, retardation at the end of the infant stage is frequently due, not to any inherent defect in the individual child, but to prolonged absence through illness, or to unfavourable home conditions.(3) Moreover, the freedom and variety of the methods of teaching now employed in many infant schools are apt to render mere attainments a rather untrustworthy criterion of general ability at this stage.

It may be of interest to quote the following example of a type of internal organisation, designed to meet the needs of children of varying grades of ability, which has been adopted with satisfactory results in a " mixed " department containing 450 children between the ages of seven and eleven. When the children first entered from the infant department they were grouped on their former records. The head teachers of the two departments conferred together and classified the pupils; the various classes in the infant department from which the new entrants would come were visited by the member of the staff of the upper department concerned, and notes made regarding teaching methods, etc.; each entrant brought a personal record. At the end of the first term all the classifications were reconsidered. The brighter entrants were given accelerated promotion on the recommendation of

(1) See Section on curriculum and methods of study for Retarded Children, pp. 203–6.

(2) Cf. § 102, p. 123.

(3) See Chapter VI, Section 69.

their former head teacher. There was a class at the bottom of the school for "the duller and more backward" children. Here every effort was made to observe and remedy their weaknesses, and they were promoted as soon as they had reached a normal standard. There was a series of parallel "A" and "B" classes for each year of the four-years' course, for brighter and less brilliant pupils, respectively. There was also a "fifth year" group designed to meet the needs of those pupils who completed the four years' course in less than the normal time. Each parallel class throughout the school was divided into two groups, under leaders, and had record boards showing stars which had been received for excellence in work and play.

It would appear from our evidence that some otherwise excellent teachers still fail sometimes to make appropriate provision for the specially gifted children who are in effect frequently classified with children of average capacity, with the result that their special gifts are not adequately recognised and developed, at any rate in the lower classes or groups of the primary school. The range of curriculum required for specially gifted children need not differ greatly from that hitherto in vogue in some "all-age" elementary schools. It is largely for this reason that we suggest that in the smaller schools steps might well be taken to organise at least one separate class for the abler children. On the other hand, we deprecate the opposite practice, which to judge from our evidence still obtains in many schools, of devoting over much attention to the clever children who give promise of winning free places and scholarships, with the result that insufficient care and thought are given to the problem of making adequate provision for the average and retarded children in the school.[1]

THE INTERNAL ORGANISATION OF PRIMARY SCHOOLS FOR PUPILS BETWEEN THE AGES OF FIVE AND ELEVEN.

(67) The differences between rural and urban schools are often exaggerated: the fundamental problems of organisation and teaching are much the same in both; nevertheless the primary school in rural areas presents some problems of its own. We refrain from discussing the organisation of the "all-age" schools, as we assume that under the general reorganisation of public elementary schools which is at present being carried out, the "all-age" school will gradually disappear.

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[1] See Chapter X, page 131.

While the curriculum for infants is excluded from the purview of our present inquiry, it is nevertheless most important to bear in mind that the lowest class in the typical rural primary school is an infant class, and that the curriculum which is possible for children between the ages of seven or eight and eleven depends to a large extent on the general character and scope of the instruction given in such classes. It was generally admitted that owing to the composite character of the groups or classes, it is not an easy matter to organise a small primary school effectively so as to maintain a progressive course of instruction. However small a school may be, it may contain children who differ in age and in innate capacity as widely as children do in the larger urban schools, but so few children will fall within any particular age range or grade of capacity that it is quite impossible to staff the school on the basis of a separate teacher for each grade. The adoption of a rougher classification is inevitable, and the fact that children of varying age and ability have usually to be grouped together would render the task of teaching them sufficiently arduous, even for a trained teacher. In point of fact, however, many of the assistant teachers in rural schools are untrained.(1) Individual attention is as essential in rural as in urban schools, and, owing to the smaller numbers of pupils, should be more easily secured. Equal care must be given, however, to ensuring that it is secured in fact, and that the requisite steps are taken to make certain that any retardation of the abler children is avoided and that at the same time adequate consideration is given to the special needs of backward pupils.

To quote from an interesting memorandum sent to us by the Education Section of the British Psychological Society—"The diversity in age and attainment, together with lack of opportunity for group classification, makes flexible and individual methods essential, if good work is to be done. A well organised arrangement of individual work in definite study together with abundant opportunities for group activity in the directions where such activity is really fruitful is particularly important in the rural school." It is clearly no easy matter so to organise group teaching as to give sufficient oral instruction and to secure sufficient oral practice for each pupil, and at the same time to make adequate provision for sections or groups of children who are not at the moment under oral instruction. The small country school containing,

(1) Cf. § 93, p. 113.

say 25 pupils and staffed with one teacher only, presents a problem of its own. In such circumstances it is exceedingly difficult for a single teacher to devote adequate attention to the infants and at the same time to give appropriate instruction to the different groups or sets of older children. The difficulties presented by these schools have been successfully overcome by the genius of the teachers in some parts of this country and in Scotland. Nevertheless it seems unfair that the teachers should have to contend against such great obstacles, and we think that they should be removed at as early a date as possible. We accordingly urge *that, wherever the numbers justify, there should be a responsible assistant to take charge of the infants.*(1)

We have received a large number of interesting memoranda from head teachers of rural schools, describing the internal organisation and methods of instruction adopted. The impression gained from these memoranda and from our oral evidence is that the teachers in schools which have been converted into primary schools for pupils between the ages of five and eleven are developing a technique and a type of organisation which are yielding good results. It may be of interest to quote a few examples of the internal organisation adopted by experienced teachers in small country schools. In a small country school in the North with an average attendance of 12 children under one teacher, the pupils are grouped for the different branches of the curriculum. The teacher makes the fullest possible use of individual effort on the part of the children by training them from the very beginning to work for themselves, and by allowing them all to make their own pace. At the same time she has fully realised the value of developing a family spirit within the school. Every child on entering the school sees all the pupils working independently, with their own books, and is gradually made to realise that he must learn to read as soon as possible in order to be able to work by himself. In the earliest stages the teacher concentrates on reading, so that by the age of seven the normal child can read with profit and is accorded the privilege of working to a certain extent by himself. The scholars are allowed, irrespective of age, to proceed to other and more advanced books as soon as they can show their competency. By encouraging individual work within reasonable limits, the teacher is able to give her attention to different groups of

(1) See also § 57, p. 68.

children in turn. The head teacher of a primary school in the Midlands, containing 21 pupils, stated that she placed her pupils in sections according to their ability. As soon as a child could do the work of a subject in one section it passed on to the next. It did not follow, however, that a child would be in the same section for every subject or for a whole year, e.g. a pupil might be in section F, i.e. the top section, for reading, and in section C (equivalent to standard II) for arithmetic. Again, at the beginning of the year a child might be in section C for reading, by the end of the year in section E for that subject. This head teacher had five sections for arithmetic and reading (not counting the infants), three sections for composition and recitation, and two sections for history and geography. Music, drill, needlework and handwork were all taken in one class.

In another primary school with an average attendance of 30 pupils, which is staffed with two teachers, it has been found possible to make the work as individual and progressive as in smaller rural schools with an average attendance of from 12 to 15 children and staffed by one teacher. Each pupil advances at his own pace in the several branches of the curriculum, and the older children help the younger children with their work. From an early age in the infant class the children begin to read simple books, and they pass on from one grade to another in number, writing and composition, when the teacher is satisfied as to their ability and attainment. Methods of self-instruction are not discarded when the child leaves the infant stage, but are continued throughout the school. Transfer from the infant class normally takes place at about the age of seven or eight, though the varying number of entrants from year to year determines to some extent the age of transfer as the classes have to be kept fairly equal in size. It has been found in practice that the best results are obtained when the work is conducted on individual lines, and that attempts to organise children in small groups according to age are, as a rule, unsatisfactory and retard their progress. The only occasions when the children work together are in conversation lessons, speech training, and rhythmic work. The work throughout the school is based on a confidence in the child's desire for knowledge, supplemented by careful correction and control on the part of the teacher.

CHAPTER VI.

RETARDED CHILDREN IN THE PRIMARY SCHOOL.

THE DEVELOPMENT OF DIFFERENCES IN MENTAL CAPACITY IN CHILDREN.

(68) In chapter V we have drawn attention to the need for classifying children according to their educational capacity. In this chapter we propose to discuss the need for grading retarded children, and for providing in the different grades the type of instruction best suited to them. Recent psychological researches, based mainly upon the application of standardized tests of intelligence, indicate that, as regards innate mental capacity, the differences between individual children increase almost in direct proportion to their age. For instance, a child who is backward by one year at the age of five will probably be backward by two years at the age of ten, and by three years at the age of fifteen. Throughout the child's school life the ratio of his mental age to his chronological age appears to be fairly constant.

The range revealed by these researches is unexpectedly wide. By the age of ten, the differences between individual children, exclusive of idiots and imbeciles, cover a range equivalent to more than ten years of mental growth. The dullest pupil of ten may have a mental age of less than five, while the most gifted may have a mental age of over fifteen. By the end of the primary stage the differences have so far expanded that after the age of eleven different types of education are urgently needed. Towards the end of the primary stage, however, that is to say by the age of ten, nearly 80 per cent. of the children fall within a range of about three mental years, and may therefore be conveniently spread out over three consecutive classes. The exceptional children, therefore, will comprise about 10 per cent. who are unusually bright, i.e. super-normal, and about 10 per cent. who are definitely retarded, i.e. sub-normal.(1)

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(1) Children may be broadly classified in respect of their natural capacity into (*a*) those who are highly gifted, i.e. super-normal, (*b*) those of average ability, i.e. normal, and (*c*) those whose ability is below the average, i.e. sub-normal.

It is most important even at the primary stage to differentiate between mentally defective children and children whose mental development is retarded in a greater or less degree. The Joint Committee of the Board of Education and the Board of Control in their *Report on Mental Deficiency* (1929) have suggested that so far as children under the age of eleven are concerned, the expression " retarded child " should be taken to mean a child with a mental ratio of between 50 and 80, and that the expression " mentally defective child " should be taken to mean one who has a mental ratio of below 50.(1) The Joint Committee propose to confine the term " mentally defective " to those children, whether feeble-minded, imbecile, or idiot, who have been notified by the local education authority to the local mental deficiency authority as " ineducable," or as in immediate need of care and control under the Mental Deficiency Acts. This would roughly mean children with mental ratios below 50.(2) In non-technical language these suggestions imply that a child aged ten by the calendar with a mental age of between five and eight years would be classed as a retarded child ; if he had a mental age of below five years, he would be notified as mentally defective. The Joint Committee suggest that the expression " retarded children " should be regarded as including (*a*) the " more retarded " children, sometimes rather infelicitously described as "educable defective " children, who have mental ratios of between 50 and 70, e.g. a child of the chronological age of ten with a mental age of between five and seven years, and (*b*) the " less retarded " children, usually known as the dull or backward, who have mental ratios of between 70 and 80, e.g. a child of the chronological age of ten with a mental age of seven or eight. Thus, in ordinary educational parlance, the expression " dull or backward children " usually means children who about the middle of their school career are backward by about two classes or two years.

Recent psychological surveys (3) have shown that in most industrial areas, although the numbers vary greatly according to the district served by the school, the " more retarded " or " educable defective " children amount to only about 1·5 per cent. of the school population of the same age, and the " less retarded " i.e. " dull or backward " children, to at least

(1) *Report on Mental Deficiency* (1929), Sections 151 and 156.

(2) It is necessary to emphasise the fact that the restriction of the term " Mentally Defective " to children in this group is recommended for administrative purposes only.

(3) See page 80 of the *Report on Mental Deficiency* (1929), Part IV.

10 per cent. of the school population of the same age. In some rural areas it is estimated that about 2·8 per cent. of the children should be classified as "more retarded," but no trustworthy statistics are available as to the numbers of "less retarded" children in these areas.

It is estimated that rather less than half of the dull or backward children have been retarded through accidental causes, such as illness or compulsory absence from school. The remainder are children who are innately dull. The available psychological evidence indicates that the slowly developing child rarely catches up with the quick or average child.

THE MAIN CAUSES OF EDUCATIONAL RETARDATION.

(69) Inquiries on this subject have been carried out in several areas, and a wide variety of causes has been disclosed. General backwardness is not as a rule a simple mental condition or defect, but rather a complex result due to various causes. Of these there are three main categories:—(*a*) Innate mental causes; (*b*) physical causes; (*c*) extraneous causes. A distinction should be drawn between children suffering from an inborn retardation of a permanent character, and those suffering from an acquired and curable retardation; in other words, between those usually described as "dull" and those generally known as the merely "backward."

(*a*) *Innate Mental Causes.*

(i) *Inferiority in innate general intelligence.* The psychological evidence indicates that "dull" children with a low degree of general intelligence are suffering from a mild form of congenital inferiority differing only in degree from actual mental defect. There are, however, many degrees of "dullness." In some instances it may be so extreme as to amount to mental defect in the sense of Section 55 of the Education Act, 1921.[1] In others, the degree of "dullness" is not

[1] "(1) A local education authority shall, with the approval of the Board of Education, make arrangements for ascertaining—(*a*) what children in their area, not being imbecile, and not being merely dull or backward, are defective, that is to say, what children by reason of mental or physical defect are incapable of receiving proper benefit from the instruction in the ordinary public elementary schools, but are not incapable by reason of that defect of receiving benefit from instruction in such special classes or schools as under this part of this Act may be provided for defective children; and . . . . ."

sufficiently grave to prevent the child from being kept within the ordinary primary school system, but further factors associated with the innate inferiority in intelligence may retard the progress of the child and call for special attention.

(ii) *Special disabilities*, such as poor memory, unstable attention, poor visual or auditory imagery.

(iii) *Inherent emotional defects*, such as instability and emotional apathy. Temperamental defects of this character are often greatly accentuated by extraneous conditions at home and in the school, and by defects of character due to unsuitable training.(1) For instance, a child of this type may have emotional conflicts with parents, teachers, or fellow pupils. He may take an antipathy to a particular teacher or to certain subjects in the curriculum. He may resent or misunderstand disciplinary control; he may worry unduly about conditions at home. Such temperamental or emotional defects under unfavourable environmental conditions often aggravate a child's general incapacity.

(iv) *Irregularity of mental growth*, which sometimes appears to be associated with slow physical development.

(*b*) *Physical Causes.*

(i) *General physical defect*, e.g., general poor health and lowered vitality, whether due to general constitutional diseases such as tuberculosis, rheumatism and rickets, or to unfavourable home conditions, for instance, malnutrition, insufficient sleep, excessive fatigue from work done out of school,(2) or to *sequelae* of the acute infectious illnesses of childhood.

(ii) *Some specific trouble* affecting primarily a limited part of the organism, e.g., defective vision, defective hearing, defective speech, adenoids, enlarged tonsils.

(*c*) *Extraneous Causes.*

(i) *Absence from school*, including late entry and irregular attendance for various reasons, e.g. illness of the child himself; infection in the home; negligence on the part of parents; or the migration of the family from district to district, which is a frequent occurence in rural areas.

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(1) See also (*c*) (ii) and (iii) below.
(2) See also (*c*) below.

(ii) *Environmental handicaps*, arising either from poverty, or from ignorance or lack of sympathy on the part of the parents; insufficient or unsuitable food; lack of sleep; overcrowding in the home; anxiety about conditions at home; insufficient recreation; lack of culture in the home; overwork out of school hours.(1)

(iii) *Defects within the school itself*, e.g. unsuitable premises; inappropriate teaching, due partly to mechanical or ill-devised methods of instruction; inadequate attention to individual children who have been absent from school for comparatively long periods; too slow or too rapid promotion; abrupt changes in teaching methods and general educational environment, particularly on transfer from the infant school to the upper section of the primary school.(2)

Several of our witnesses urged that much backwardness was "school made," being due (*a*) to setting tasks to pupils before they are ready for them; (*b*) to inadequate classification, e.g. bright pupils doing the same work as the less bright; (*c*) to accumulating things half or less than half learnt; (*d*) to suggesting directly or indirectly to young children that they are stupid.

THE IMPORTANCE OF EARLY DETECTION OF THE CAUSES OF RETARDATION.

(70) As we have shown in Section 68, the limitations of the retarded child are not nearly so conspicuous at the age of seven as at the age of eleven or at the adolescent stage. Nevertheless, it is clearly most important in the interests of these children that the main causes for their retardation should be discovered at as early a stage as possible in their school career. In some instances retardation will begin to show itself even at the infant stage, and we would suggest that the teachers in schools for pupils between the ages of seven and eleven should discuss with the teachers of infant schools the previous school history of retarded children. To this end, we think that the practice of passing on a brief report on each pupil is greatly to be commended. In cases of obvious retardation the head teacher of the primary school, in association with the class teacher, would be well advised to search for the principal cause or causes in each individual instance. It is probable that in some cases the teacher will

(1) Cf. pages 54-58.
(2) See Chapter V, page 74.

require the assistance of the school medical officer, the school nurse, the parents or guardians, and where available, the psychologist. It seems to us particularly important in cases of retardation that the head teacher should, if possible, get into touch with the parents in an attempt to counteract any cause of retardation connected with the child's home conditions and environment. The Child Guidance Clinics which are now being organised in some urban areas might be able to render valuable assistance in some cases of this kind.

THE "MORE RETARDED" CHILDREN AT THE UPPER STAGE OF PRIMARY EDUCATION.

(71) In view of the comparatively slow development of differences in mental capacity between children up to the age of seven, there is little need to make special provision for retarded children at the infant school stage. There was general agreement, however, among our witnesses that during the stage between the ages of seven and eleven it was of great importance to make suitable provision for the retarded children, while at the same time giving adequate scope to the more gifted children. As regards children who are "more retarded," i.e. those who are sometimes described as "educable defectives," several of our witnesses thought that it might be desirable to provide "special schools" wherever possible, as in fact is done at present in many of the larger urban areas, e.g. London, Manchester, and Birmingham. This, indeed, is the policy recommended for such areas by the Joint Committee of the Board of Education and the Board of Control, who, however, have produced strong arguments for abolishing the Medical Certificate. To this we find no objection, provided that the local education authority has some equally effective power to direct the child to the appropriate educational institution. *Any such "special schools" should be closely related to the general educational system, while preserving freedom to provide for the educational requirements of particular types of children.*

The age at which the child should be placed in a "special school" is rather a debatable point, and the solution adopted will probably vary from district to district. The cases of individual children should be carefully considered before a decision is taken as to the age of transfer. As a rule no child

under the age of seven will be sent to a " special school," and probably in most cases it will be wiser to give the borderline child a year or two's trial in the ordinary primary school.

The " special school " needs to be large enough to permit of satisfactory organisation and the proper grading of pupils, in order that the children may be given full opportunities to develop such potentialities as they possess. Its establishment in any area will depend upon the size of the school population in the district which it is required to serve. In large portions of England and Wales the numbers of " more retarded " children to be found in a given district will be too small to justify the establishment of " special schools." The children will have to be cared for in the local schools ; or where special classes for the " less retarded " children are formed, they may be included in these classes. In any case it should be possible to engage a teacher with a knowledge of " special school " methods who will visit the local schools and, in conjunction with the class teacher, will plan courses of education suitable for the few children who are to be classed as " more retarded."(1)

THE "LESS RETARDED" CHILDREN IN THE PRIMARY SCHOOL.

(72) Much careful attention has been devoted to the training and education of " educable defective " children, who may be regarded as the lower section of the category of the " retarded." On the other hand, comparatively little consideration has hitherto been given to the complex educational problem presented by the " less retarded " children. It is true indeed that in a few areas, and in a number of individual schools, the special needs of these so-called " dull or backward " children have been carefully studied. But on the whole there has been hardly any attempt to pool experience. In the following passage of their *Report on Mental Deficiency* (1929) the Joint Committee of the Board of Education and the Board of Control lay special stress on the importance of early attention to the needs of these children between the ages of seven and eleven.(2) " The sooner the retarded child is

(1) The existing law regarding the duties of Authorities to provide for the education of " educable defective " children, as described in Section 55.—(I.) (a) of the Education Act, 1921, is contained in Section 56 of that Act.

(2) Page 145.

discovered and the sooner he receives a special measure of attention, the greater is the hope of remedying or compensating for his particular disability. If scientific methods of case-study are employed, the majority of those who are likely to be dull or backward can be detected soon after the age of seven. One of the greatest obstacles to accelerating the progress of the retarded child is the child's growing consciousness of his own inferiority. Before the age of eleven he may hardly have realised his unfortunate position. But with the increase of self-consciousness that the approach of puberty brings, he begins to contrast himself with his normal fellows and strongly resents the babyish methods that are used in trying to teach him the elements of reading and of number. Here lies one of the most important reasons both for attacking his difficulties at an early age, and for placing him when he is older with those who are on a level that more nearly corresponds with his own."

We strongly endorse the recommendation of the Joint Committee *that retarded children should be recognised as requiring special attention between the ages of seven and eleven. Classes which are specially organised for this purpose, or those which contain any considerable proportion of such children, should be small.*

Note.—Sections dealing with the classification and the appropriate curricula for "less retarded" children within the primary school itself will be found on pages 77–82 and 203–6.

CHAPTER VII.

THE CURRICULUM OF THE PRIMARY SCHOOL.

(73) The elementary school curriculum was formed during the 19th century by a somewhat irregular process of accretion, now one subject and now another having been grafted on to the original stock, the *3 R's*. The history of the process has been told elsewhere,(1) and we need not here recount the arguments or revive the debates, instructive as they were, out of which the practice of to-day has gradually emerged. But the formal adoption of the primary school as an autonomous unit in the educational system renders necessary a fresh inquiry into the question what should be taught to children between the ages of seven and eleven, an inquiry conducted with reference to the specific part to be played by the primary schools in shaping and fostering the life of a people under modern economic and social conditions.

The changes which have taken place since the passing of the Education Act of 1902 have given our problem a complexion very different from the one which it presented to those who planned and administered popular education during the last century. The elementary school system which was originally designed " for the children of the labouring poor " has long ceased to be self-contained, and is in effect being reorganised out of existence. Those who would have been its older pupils will be distributed among the schools—grammar schools and modern schools—which in our *Report on the Education of the Adolescent* (1926) were envisaged as offering different varieties of secondary education ; and the function of the residue of the old system will accordingly be to provide a primary education in the proper sense of the term—that is, one which will be a basis for all types of higher teaching and training. In England the State has never, as it has done in republican Germany, compelled all children to pass through the primary schools. It may indeed be many years before children of widely different social grades resort to the primary schools as freely as they resorted long ago to the parish schools of Scotland or to the common schools of the New

(1) See Chapter I of this Report; Chapter I of the *Report on the Education of the Adolescent* (1926), and *Report of Board of Education for 1910–11*, pp. 2–41.

England States. Nevertheless, we have already travelled so far in this direction that the primary schools must be considered as in principle common schools : that is, institutions provided not for a particular section of the population, however large, but for all who choose to take advantage of them and to use them as the normal way of approach to institutions for secondary education.

(74) To say this is in effect to say that the special task of the schools which are concerned with the later years of primary education will be to provide for the educational needs of childhood, just as it is the function of the nursery and infant schools to deal with the needs of infancy, and of the post-primary schools to deal with the needs of adolescence. In framing the curriculum for the primary school, we must necessarily build upon the foundations laid in the infant school and must keep in view the importance of continuity with the work of the secondary school, but our main care must be to supply children between the ages of seven and eleven with what is essential to their healthy growth—physical, intellectual, and moral—during that particular stage of their development. The principle which is here implied will be challenged by no one who has grasped the idea that life is a process of growth in which there are successive stages, each with its own specific character and needs. It can, however, hardly be denied that there are places in our educational system where the curriculum is distorted and the teaching warped from its proper character by the supposed need of meeting the requirements of a later educational stage. So long as this is the case, it must remain important to emphasise the principle that no good can come from teaching children things that have no immediate value for them, however highly their potential or prospective value may be estimated. To put the point in a more concrete way, we must recognise the uselessness and the danger of seeking to inculcate what Professor A. N. Whitehead calls inert ideas—that is, ideas which at the time when they are imparted have no bearing upon a child's natural activities of body or mind and do nothing to illuminate or guide his experience.

There are doubtless several reasons why a principle so obviously sane should in practice be so often neglected. Perhaps the reason most relevant to our inquiry is that in the earliest days of popular education children went to school to learn specific things which could not well be taught at

home—reading, writing and cyphering. The real business of life was picked up by a child in unregulated play, in casual intercourse with contemporaries and elders, and by a gradual apprenticeship to the discipline of the house, the farm, the workshop.(1) But as industrialisation has transformed the bases of social life, and an organisation—at once vast in its scope and minute in its efficiency—has gripped the life of the people, discipline associated with the old forms of industrial training has become increasingly difficult outside the walls of the school. The schools whose first intention was to teach children how to read have thus been compelled to broaden their aims until it might now be said that they have to teach children how to live. This profound change in purpose has been accepted with a certain unconscious reluctance, and a consequent slowness of adaptation. The schools, feeling that what they can do best is the old familiar business of imparting knowledge, have reached a high level of technique in that part of their functions, but have not clearly grasped its proper relation to the whole. In short, while there is plenty of teaching which is good in the abstract, there is too little which helps children directly to strengthen and enlarge their instinctive hold on the conditions of life by enriching, illuminating and giving point to their growing experience.

(75) Applying these considerations to the problem before us, we see that the curriculum is to be thought of in terms of activity and experience rather than of knowledge to be acquired and facts to be stored. Its aim should be to develop in a child the fundamental human powers and to awaken him to the fundamental interests of civilised life so far as these powers and interests lie within the compass of childhood, to encourage him to attain gradually to that control and orderly management of his energies, impulses and emotions, which is the essence of moral and intellectual discipline, to help him to discover the idea of duty and to ensue it, and to open out his imagination and his sympathies in such a way that he may be prepared to understand and to follow in later years the highest examples of excellence in life and conduct.

(76) It will now be convenient to illustrate this general principle, at least so far as to make its meaning clear and to indicate the kinds of practical problems which arise when one seeks to apply it.

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(1) Professor John Dewey has given a classical description of the process in his early work, *The School and Society*, 1900.

Attention to the physical welfare and efficiency of children claims a most important place. That claim is generally admitted, but in meeting it fully there are, unfortunately, difficulties which are as serious as they are well-known. School regulations cannot affect some of the chief factors involved in the problem which it presents—that is, cannot secure that children shall everywhere be adequately and wisely clothed and fed, have proper conditions and hours of sleep and sufficient open spaces for health-giving play. In spite of great improvement it is still sometimes hard to persuade parents to act upon the advice of the school medical officers even in cases of easily remediable disorder. Under many local education authorities there is, however, some kind of organisation for dealing with the worst deficiencies on the home side, and it may be suggested that still more could be done by the judicious use and extension of parents' associations formed in connection with individual schools. Much could also be done by the widespread imitation and development of the experiments which have been made by some authorities and schools in the use of open-air class-work and activity. And although what is called child guidance is concerned more directly with the difficulties and failings of children in the moral sphere, these are known to be so closely implicated with physical troubles that the movement, as it develops, is bound to work with other influences towards raising the standard of physical efficiency among the pupils of the primary school.

These matters, essential as they are, lie strictly speaking outside the question of the school curriculum. Turning, then, to what can be done as part of the ordinary routine of school we desire in the first place to express our appreciation of the advance which has been brought about in the conception and practice of physical training. The exercises and games now prescribed by the Board of Education seem to us to offer an admirable example of education through activity at once joyous and disciplined, and we wish that the problem of fusing those two prime characters of all educative activity were as near solution in other departments of school work. But, while we can here make no better suggestions than that the instruction should be regarded as of high importance and that competence to give it in the spirit of the Board's intentions should be regarded as a most desirable item in the equipment of a primary school teacher, our principle carries us further. It leads us to advocate the claims of a physical culture which includes physical training and efficiency but goes beyond

these, since it includes also training in comely posture and movement upon social occasions. This is not merely teaching manners, if by manners one means certain conventional acts generally distinctive of a particular social class ; it is something much more broadly and essentially human. It involves that kind of sensitiveness which Plato spoke of as *eurhythmia* and valued highly because, though expressed in bodily bearing and movement, spiritual elements of deep importance were implicated in it and it was likely to run out into many expressions of a man's nature in his work.(1). Dancing is a chief means of cultivating it—provided the dances do not aim at a cheap and superficial " gracefulness " but are, like many of the old English country dances, full of aesthetic quality as genuine as it is delightful and not only linked with but expressive of simple and beautiful music. Drama, both of the less and more formal kinds, for which children, owing to their happy lack of self-consciousness, display such remarkable gifts, offers further good opportunities of developing that power of expression in movement which, if the psychologists are right, is so closely correlated with the development of perception and feeling.

(77) *Language.* There is little need to stress the importance of language training, for there are few concerned with education who would not give it the chief place among the intellectual exercises of the primary school. In a sense this has always been true ; for the ancient primacy of reading and writing was due to the fact that they are arts bearing directly upon the use and cultivation of language. What we now see more clearly than of old is that instruction in these arts must largely miss its purpose, if it is not made subsidiary to well-planned and systematic training in the direct use of oral expression and communication. In the days of classes of overwhelming size such training was scarcely possible. But those days are past or passing ; much more can now be effected, and useful examples for imitation and inspiration are not lacking. Our own observations may, accordingly, be brief.

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(1) *Republic.* Book III, pp. 398–401, particularly p. 401 C.
" Is it then, Glaucon, for these reasons that we attach such supreme importance to a musical education, because rhythm and harmony sink most deeply into the recesses of the soul, and take most powerful hold of it, bringing gracefulness in their train, and making a man graceful if he be rightly nurtured, but if not, the reverse ? " (*Davies and Vaughan's translation*, p. 97.)

(i) We are impressed by the way in which modern science confirms and indeed goes beyond the traditional belief in the significance of language in its relation to a child's individual and social development. In so far as the work of the primary school is to be regarded as preparatory to higher stages of education, whether literary, scientific or practical, we are of opinion that it can do nothing more useful than help children to gain a thorough command of the mother tongue, to use books freely as a source of information and pleasure, and to express their ideas readily in writing.

(ii) We think, however, that there is too much adherence to methods of teaching not well designed to achieve the proper purposes of language training and insufficient use of the better methods now available. To this point we shall return later.

(iii) Just as we desire to see a culture of bodily movement which includes more than ordinary physical training, so we wish the cultivation of speech in the primary school to go beyond the art of correct and lucid expression. Children should learn to dislike coarse vocalisation and slovenly articulation and to feel something of the dignity which is added to life when men use with care and respect the beautiful instrument of discourse which they have inherited from their forefathers. From the point of view both of individual and social culture and of national solidarity this is a matter of no small importance, and we assent cordially to what is said upon the subject in the *Report of the Departmental Committee on the Teaching of English.* Reading aloud, verse recitation, singing and drama are the obvious occasions for the formal cultivation of good voice production and seemly speech, but there should be a general pressure in the same direction throughout the school work.

It is needless to add that the example of the teacher's own practice is the force upon which we chiefly rely. His own language may be that particular dialect which has come to be recognised as standard English (or Welsh as the case may be), or it may contain other dialectal characteristics. What is important is that the language he uses on all occasions should be grammatically correct and free from solecisms.

(78) *Manual Skill.* We have spoken of language as a main instrument of intellectual development through its use as a machine of intercourse between the child and the world of

other people, children and adults. There is another world, the material, which also plays a great part in his mental growth. The means of action and reaction here are the correlated and nicely adjusted activity of senses and limbs—particularly the hand and fingers.(1)

When children reach the primary school, speech assumes for the majority the leading role in the development of knowledge and intelligence. For some, including the very dull, this is not the case, indeed there is no child, however intelligent, whose range of primary experience—to be converted later, it may be, into advanced knowledge, and creative thought—will not be usefully extended by simple but regular and progressive constructional work. This is apart from and in addition to practice in the skilled use of the pen in writing and the pencil and brush in drawing. Both drawing and constructional work, including the making of models out of suitable material, may often contribute most usefully to a child's study of the subjects presented to him, and it is to be hoped that in the primary schools constructional activity and drawing of a pertinent kind will be increasingly developed. We insert the qualification "pertinent" to make clear that we do not recommend either model-making or illustrative drawing on the vague ground that they constitute what is called expression work but only when they definitely help understanding or increase enjoyment. We desire that drawing should be pertinent both to the constructional and literary work of the pupil.

(79) *Aesthetic Subjects.* Handwork and drawing are, as we have said, useful as ancillary means of learning about other things, but they should also hold an important place in their own right. One of the most striking of modern observations in the field of education is the discovery how wide-spread among children is the gift not only of enjoying but also of producing simple forms of beauty. In painting, in the simpler crafts, in music, even in verse, their performances, when encouraged by a teacher who knows how to direct without interfering with their unsophisticated sincerity, are generally interesting and often surprisingly good. Although, in the majority, interest

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(1) The striking observations and deductions made in this field by Seguin and others form an important and interesting chapter in the history of educational practice. They indicate that in the co-ordinated activities of sense and limb lie the first dim beginnings of intelligence, and that language can play its part only when these have established the necessary foundations in experience.

in aesthetic production seems to be left behind as they reach adolescence, yet while it is predominant it plays a vital part in the formation of mind and character. Many educationists will indeed be disposed to think that, as Dr. Bridges has said in what is, perhaps, the finest educational treatise(1) written since Wordsworth's *Prelude*, "there is nought in all his nurture of more intrinsic need than is the food of Beauty." Others, hesitating to accept a claim pitched so high, will yet agree that the creative powers, of which even the ordinary child has his share, give his teachers the opportunity of fostering very desirable tastes, desirable not only because they will improve the quality of his adult leisure but also because they must in the long run tend to keep up the national level in craftmanship and incidentally assist in the improvement of many products of industry ; and this we take to be a consideration of great weight.(2)

Taking what has just been said as the basis of criticism we are bound to judge that while drawing has a barely adequate place in the present curriculum for children, that assigned to handwork of all kinds and, especially craftwork, is definitely insufficient, particularly in the case of boys. Girls have their needlework, but we should be glad to see the work in this subject more widely liberalised and developed everywhere as it is in the better schools into a delightful craft. But girls as well as boys should be allowed to learn other crafts.(3) It is much less important that a child should learn many than that he should bring his skill in at least one to the point where he can use the materials freely to express ideas of his own. It is also of the first importance that the crafts taught

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(1) Bridges, The Testament of Beauty, IV, 643. (1929.)

(2) There is, however, always a certain risk that such handicraft teaching may become merely conventional, unless the teachers keep in close touch with craft practice. Cf. *Report of the Departmental Committee on the Training of Rural Teachers* (1928), Section 167, "there is a danger of handicraft becoming conventionalised as a school subject, unless contact with craft practice, as understood by practical craftsmen, is constantly maintained."

(3) Cf. op. cit. Section 166, "Of late years, particularly, there has been in many areas a notable development in the teaching to both boys and girls of varied forms of handicraft such as bookbinding, basketry, raffia-work, rug-making, leathercraft, weaving, domestic craft, and some of the lighter forms of wood and metal work ; and also a development in the use of illustrative handwork as part of class teaching in arithmetic, science, geography, history, and drawing. It has not generally been found advisable to attempt in any one school a large number of these varied forms of handicraft, but to concentrate on one or two crafts with which the teachers have made themselves familiar."

should be genuine, and representative of a great historic line. Little children may be allowed to discipline their fingers by making things in paper and cardboard, and such materials are legitimate at any stage when, for instance, the purpose is simply to make models illustrative of some geographical or historical topic. But craftwork, as we understand it here, must be inspired by one of the great traditions and, unless it is so, cannot fill the place we assign to it. In this statement we mean to include handwriting, which has at times risen to the level of a very beautiful craft. Without entering into the vexed question of the propriety of what is called script writing, we would insist that handwriting should be influenced throughout the school by the best English traditions, and taught as a mode of art as well as a useful instrument.(1)

Of music we need say nothing here except to indicate that we count it among the indispensable elements of the primary school curriculum. The subject enjoys a long established place in primary education, and its teaching in the schools shows a response to the present revival of the art as a constituent of the cultural life of the nation.

(80) *Other subjects.* Of these, in the present general review, we may also speak very briefly. We mean them to include, in addition to literature, the beginnings of science and mathematics, geography, and history.

Literature, in the sense of prose and verse, read or learnt for enjoyment, has an indispensable place, and we give in an addendum to this report(2) some suggestions as to the way in which that place may be filled. We would, however, point out here that in the primary school much of what is commonly taught as history may better be read as literature. We have in view partly stories, such as the legends of King Arthur and Robin Hood, which are priceless national treasures but not serious history, and partly other stories of genuine historical texture that make a strong appeal to children but cannot, in the simple form in which they must be presented, be used to build up the notion of historical continuity. A child may gain useful historical materials from such stories, but he should read them, as he may later read a historical novel, mainly for the interest of their contents. In the same way a child may well read in these years a simple connected history of his own

(1) See Section on Handwriting, page 193.
(2) See pages 162–3.

or another country, not for the purpose of learning the story in detail, but in order to obtain a general outline of it which he can fill in at a later stage.

(81) Under science we include :— (i) a study of the more salient features of plant and animal life, as far as possible in their natural setting—a study strictly elementary in scope yet conducted in a genuinely scientific spirit ; (ii) some first-hand study of the apparent movements of the sun, moon and a few stars, taken in connection with the sequence of day and night and the seasons ; (iii) a rudimentary study of some outstanding physical facts, such as the working of the mariner's compass. Under mathematics we include, in addition to the more familiar parts of arithmetic, a simple practical initiation into the properties of spatial figures, especially in so far as these emerge in pattern designing and are involved in the making of models in paper or cardboard. This rudimentary geometry will give opportunity for gaining skill in the use of straightedge and compass and in measurements of moderate but increasing accuracy. In so far as it involves copying figures to scale, it will lay useful foundations for theoretical work to come in the post-primary stage. It will also include the formation of the concepts of area and volume and the mensuration of the simpler plane and solid figures. In the highest class it may reach the measurement of angles and the beginnings of what has been described as Boy Scout Geometry.

(82) During the primary school course children should be taught to reach the conception of the round earth, to gain some knowledge of its peoples and their distinctive modes of life and activity, and to acquire some familiarity with the preparation and use of maps. Lastly their experience, at first but rudimentary, of the flux of events in time, should be deepened and widened in the direction of what is called the historical sense, so that in respect of events and objects within their own observation they may understand a little of how the present has grown out of the past and contains within itself the germs of the future. Although formal history is appropriate only to a later stage, they should have gathered, about people and things in successive historic periods, a harvest of romantic information which will create an intelligent interest in history of a serious character.

(83) The foregoing inventory of the main content of the curriculum has necessarily been written in terms of subjects.

In no other way is it possible to summarise concisely the content of a curriculum. But it will be noted that even in a formal catalogue of this kind it is scarcely possible to keep the items distinct from one another. For instance, any treatment of linguistic or manual training tends to overflow at once into a number of departments of school study, and one cannot go far into the question of physical training without being led into references to music and drama. This observation introduces a question of great weight. It has been maintained that teaching by subjects is a mode of instruction which, though it may be appropriate for older boys and girls, who have themselves developed specialised interests, and who are ready to follow the major intellectual pursuits of mankind along the lines of their logical development, does not always correspond with the child's unsystematised but eager interest in the people and things of a world still new to him. We agree with this view, and we think that what is needed, therefore, is a new orientation of school instruction which shall bring it into closer correlation with the natural movement of children's minds.

We very much doubt whether a mere reclassification would obscure the old landmarks between the various primary subjects, or whether much would be gained by so obscuring them. Real change, where change is desirable, can be effected only by a different method of approach to these subjects. What is perhaps a characteristic method of approach, may be illustrated from the way in which William Cobbett dealt with the education of his own family.(1) Cobbett, with characteristic violence, rejected the idea of public education on the ground that schools could only give a devitalised kind of instruction, an organised book drill that would do nobody any good. His own method was to engage the interest of his children in the work and occupations of his rural holding, and to let them discover that these could not be carried on successfully without "book learning." Thus when the father, acting on the advice of a gardening book, raised a prodigious crop of melons, the eldest boy, fired to emulation, read the same book "perhaps twenty times over." Similarly, "calculations about the farming affairs forced arithmetic upon us: the *use*, the *necessity* of the thing led us to the study."

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(1) Cobbett, *Advice to Young Men* (1830), par. 298, cf. pars. 288 and 290.

It is clear that what we may for the moment call Cobbett's method can hardly be prescribed for general use in primary education. Nevertheless, schools, especially rural schools, may easily find, as the best of them already do, a good many opportunities of applying it; and there are occasions in the life of every school when the method is clearly called for by the situation. For instance, preparation for the performance of a school play may for some time supply the motive for the work done in many classes, the lessons in literature, singing, drawing, needlework and carpentry all being made to converge for a while upon the great event. Similarly, a visit to some place of interest in the neighbourhood may give a definite turn to the children's lessons in history, geography and nature study. There is no doubt that at such times what the children learn has a significance and vitality not often reached in the routine lessons of the week. As Cobbett remarks about his boy's enquiry into the raising of melons, a child may then learn in a short time more than he would otherwise learn in the course of a school year. One is moved, therefore, to inquire whether a method which is known to be so fruitful on special occasions cannot be more generally adopted in the teaching of children.

(84) Various attempts have been made, in this and other countries, to answer that question. The best illustration of them is given, perhaps, by what has come to be known as the project method.(1) In its simplest form such a method would be compatible with teaching within the traditional subject divisions, and implies merely that the teaching, instead of consisting in imparting knowledge of a subject in logical order, takes the form of raising a succession of problems interesting to the pupils and leading them to reach, in the solution of these problems, the knowledge or principles which the teacher wishes them to learn. It is the method which an inquisitive boy is driven to follow, when he wants to find out how a steam engine or an electric bell works. It is the method which a boy scout would follow in trying to understand how, by triangular measurements made on one bank of a river, he can calculate the distance across it. In all such instances the inquirer sets out ignorant of the scientific or mathematical

(1) Dr. R. B. Raup, Professor in Teachers College, Columbia University, was good enough to furnish the Committee with a valuable memorandum upon the project method. Several of our English witnesses and others pressed the advantages of the method upon our attention.

principles, but keen to solve a problem that appeals to him : and the satisfaction of his desire is made to depend upon his discovering and learning the principles involved. Although most readily applicable in science and mathematics, the method in this form can often be used in other subjects. A teacher may, for example, start an inquiry into economic history from a question about the old village fair or feast.

In its broader use this method would aim at reproducing, as nearly as school conditions permit, the sort of teaching in which Cobbett believed. Some centre of interest is selected, and for a while the children's studies along many lines converge upon it or radiate out from it. One may, for instance, take up the question of the various ways in which food and other goods find their way into a given city. The pursuit of such an inquiry may first direct the attention of the young researchers to the different modes of transport, by rail, road and now by air, and bring up for solution problems concerning the draught of barges, the way in which the railway engine and the petrol engine do their work, and how aeroplanes can remain in the air. It may follow the lines of traffic backward into the country and lead to some study of the district from which the corn or the fruit and vegetables come, or the industrial regions where the textiles are made. Historical questions are started by the presence of modern methods of transportation side by side with the old. There are illustrative sketches and maps to be made ; perhaps models to be constructed. The whole process of enquiry will constantly involve reference to books, and frequently give opportunity for arithmetical calculation and the graphic representation of numerical facts. Moreover, the pursuit of the project would provide many openings for independent enquiries by children who might be attracted specially in one direction or another, or could bring special gifts, e.g. in drawing or modelling, to the illustration of particular points. Thus the work would take largely the form of co-operation between a group of children, all of whom would find they had something to learn from the work of their fellows.

In deciding what attitude we should adopt towards the project method, the following points seem to deserve consideration. In the first place, there is always some danger that a new method, particularly if, within its proper field, it is a strikingly useful one, may be forced beyond its proper

limits. While, for instance, music and drama may at times be brought in naturally and usefully in the working out of a project, it is too likely that in many instances they will merely be "dragged in," obediently to the supposed claims of a principle. The teacher in his enthusiasm forgets that both music and drama are activities which contain their own self-sufficient motives: that one may learn a song simply because the song is delightful; and act a play because acting is such good fun. The same thing is true of drawing and handicraft. Both kinds of activity may quite naturally have their place in the working out of a project, but there is no reason why they should not also be pursued outside all projects merely for their own sakes. We are, therefore, definitely of opinion that it would be unnecessary and pedantic to attempt to throw the whole of the teaching of the primary school into the project form. Next, we are inclined to think that as the children advance through the primary school the project method, while still having a useful place, should to a greater extent pass into the subject method. Thirdly, we have to remember that a change in methods of teaching, so thorough-going as the adoption of the project method, cannot be brought into operation with success except gradually and cautiously. No teacher can do his best work with a new method until he has welded it on to his educational faith and has coloured it with part of his personality. Although, therefore, we are of opinion, subject to the foregoing qualifications, that the teaching of children in the primary schools should be increasingly informed by the principles of the project method, we do not wish to see that transformation from the more usual subject method undertaken with dangerous haste or where conditions are not favourable to its success.

(85) We turn to a last question which arises inevitably when the proposal is made to depart from the traditional way of teaching by subjects. If reading and writing were to come in only in connection with the working out of projects, if the teaching of the elements of mathematics and science were to be only episodical, could there be any guarantee, first that the necessary ground will be covered by the end of the primary school period and, secondly, that the children will be sufficiently drilled in the fundamentals? Though projects may afford useful starting points for instruction in the *3 R's* and equally useful opportunities of applying what has been learned, mastery of these subjects, which is the indispensable

foundation for future work, should be obtained through a regular and systematic practice with this single aim in view.(1)

(86) As a conclusion to the whole discussion, we would point out that after all the teacher's method must ultimately be personal to the teacher, a quintessence of formal plans and methods.(2) He may adopt the project plan as incidental to his practice, or even make it, as Cobbett desired, fundamental. We doubt whether in either case he will find in it a means of approach equally accessible to all the subjects of the primary school curriculum. Certain aesthetic subjects will, of their own nature, lie outside its scope. And as regards the foundation subjects, it would obviously require a high degree of skill and experience, and the most highly developed staff work, if the teacher were to use exclusively the project method of approach, and thereby to ensure that the necessary ground in each subject will be covered without gap or hiatus. Nevertheless the principle underlying such a method, which is common also to other enlightened forms of teaching practice, does offer a sound alternative to the isolated treatment of school subjects. Judiciously applied, and based upon more direct and intrinsic kinds of teaching, it may be expected to impart a meaning and a motive to school work, and to afford the teacher a means of following the natural development of his pupil's interests.

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(1) In this context, it is useful to notice the policy adopted by Dr. Charles Washburne in the Schools under his supervision at Winnetka, outside Chicago.

Dr. Washburne draws a clear distinction between the instrumental or " tool " subjects, reading, writing and arithmetic, and the other subjects of the primary curriculum. The latter are pursued in class largely by social co-operation between the pupils and take the project form. In this part of the curriculum there is no definite programme to be followed and no definite standards of attainment are laid down. On the other hand, in learning the three *R's* every child pursues as an independent unit a very carefully thought out course. In arithmetic, for instance, the programme is limited strictly to the processes and problems of fundamental importance, he goes through it at his own pace, but is not allowed to pass from one stage to the next until he has reached in the former stages a comparatively high level of mastery. Thus, by the time he has completed the course, the teacher not only knows what ground the child has covered, but also knows that he is, to all intents and purposes, competent in it—*Educational Yearbook of the International Institute of Teachers College, Columbia University* (1924), pp. 583–586.

A similar procedure has been adopted in some schools in Germany in respect of " Kern-und Kursunterricht."

See V. J. Spasitsch, *Die Lehrerfrage in der neuen Schule*, Weimar, (1927), p. 77.

(2) Cf. pp. 151–154.

Note.—Much detailed treatment of the various aspects of the curriculum will be found on pages 150–206, which should be read in connection with this chapter. Particular attention may, perhaps, be directed to the suggestions on the teaching of English, pp. 155–165, and of elementary mathematics, pp. 175–182, and to the section on the various forms of handicraft (practical instruction), pp. 194–9. But the whole of that part of our Report is an essential complement to the general considerations set out in this chapter; and it contains our detailed views on the question remitted to us in the Terms of Reference regarding "Courses of Study suitable for Children (other than children in Infants' Departments) up to the age of 11 in Elementary Schools, with special reference to the needs of children in rural areas." We would also direct attention to the section on curriculum and methods of teaching for retarded children on pp. 203–206.

CHAPTER VIII.

THE STAFFING OF PRIMARY SCHOOLS AND THE TRAINING OF TEACHERS.

THE STAFFING OF PRIMARY SCHOOLS.

(87) If the re-organisation of the schools on the lines indicated in the *Report on the Education of the Adolescent* is to mark a real advance in education, it will be because teachers have understood how to use their new opportunities. The re-establishment of the primary school in its integrity for children up to the age of eleven should lend a fresh interest to teaching at this stage. *It is desirable that primary school teachers should not be immobilised, and that service in primary schools should be regarded as a useful preparation for the teaching of older pupils, especially for those teachers who desire later to specialise in the subjects and methods required for modern schools.*

We consider *that the general lines of the staffing of primary schools should be determined by the consideration that none of the classes should contain more than* 40 *children.*[1]

We think *that it is essential that the head teachers in all primary schools, however small, should be certificated,* and that it is desirable that ultimately all assistant teachers should be certificated.

We have already drawn attention in this Report to the importance of shading off gradually the transition from infant school methods to methods appropriate to the later stage of primary education,[2] and in view of this, we recommend *that in schools and departments for children between the ages of seven and eleven the earlier work should be conducted by teachers who have had some experience in schools for infants and possess some knowledge of modern infant school methods. Children at this stage are usually taught by women; for the later stages the teachers in boys' schools and in mixed schools should include an adequate number of men. We consider that the headships of mixed schools should be open to both men and women, and that there should, where possible, be a senior assistant of the opposite sex to the head teacher. In large schools of this type the post of senior assistant should be treated as one of special responsibility.*

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(1) *See also* Chapter V, § 64, and Chapter VI, §72.
(2) Cf. pp. 66–70 and 74–5.

THE TRAINING OF TEACHERS.

The type of teacher best suited for work in Primary Schools, and the provision made in Colleges for appropriate Training.

(88) Most of our witnesses were of opinion that teachers with general qualifications rather than specialists would be best suited for work in primary schools. The Association of Education Committees and the Association of Municipal Corporations held that it was not advisable to adopt the specialist system in such schools, and we support this view. In our opinion it is clear that it is the teacher with the general rather than the specialist outlook who is of value at the primary stage. From the point of view of character training and discipline children need a class teacher who is responsible for the greater part of their work. To be taught in turn by various teachers, each interested in his own subject, might leave the children without the general guidance that they need at this stage.(1)

The two-year training courses were originally planned for students who had not had the benefit of a full grammar school education. Of late the course has been somewhat lightened, and a choice of subjects has been allowed, but this has tended to produce teachers with specialist interests. The need for the revision of the two-year training courses in the light of the improved preparation of entrants to training colleges, most of whom now have a full secondary education up to the age of eighteen, was pointed out in the *Report of the Departmental Committee on the Training of Teachers* (1925). In accordance with the recommendations of that Report, the training colleges have now been associated with the universities for the purposes of the final certificate examination. Since this examination is now to some extent internal, it is to be hoped that some method will be found for securing a just balance between the academic and professional sides of the courses for the training of teachers.

A further question arises as to whether there should be training courses closely associated with the successive stages of education, or whether a general course is to be preferred. Our witnesses were divided on this point. We believe that young students when entering upon their profession should have a general view of its problems.

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(1) It may, however, be desirable that subjects such as music and drawing, should be taken by teachers who have special qualifications.

What is needed in the new conditions is a general professional training for teachers of children, with an advanced academic qualification for teachers in the new modern schools. This general training need not preclude special study and experience of one particular stage of education. We suggest therefore *that appropriate steps should be taken to adjust the courses of training to suit the new organisation of schools.*

The probationary period of Certificated Teachers.

(89) The "probationary year" of service (1) should be an additional year of practical training. The necessity for appointing teachers to vacancies as they occur, makes it difficult for an authority to ensure this. Such an arrangement could be carried out with complete success only if the teacher were regarded as supplementary to the ordinary staffing of the school. We realise that within existing limitations a local education authority cannot do more than endeavour to ensure that young teachers during their probationary year should be placed so far as possible, in primary schools under sympathetic head teachers who will encourage them to develop and follow up the training which they have already received.(2) We fully recognise the difficulties confronting local education authorities, and more particularly county authorities, in this matter, owing partly to the small size of many of the rural primary schools, and partly to the conditions governing the appointment of teachers in non-provided schools. Nevertheless, we think that even in county areas some attempt might be made to arrange that young certificated teachers should pass their first years in the profession in circumstances which would ensure that the best use was made of their previous training. This would not interfere in any way with the appointment of young teachers possessing special qualifications direct to posts in modern schools; through the experience of serving for a few years in a primary school might well be of great use to a teacher with special qualifications who intended eventually to take up work in a later stage of education. It is abundantly evident that the present somewhat haphazard methods of allocating young teachers on their first appointment may lead

(1) A teacher recognised under Schedule I of the Code who enters a public elementary school, has to serve for a period of probation (Schedule I, 4).

(2) In some areas an officer has been appointed to supervise young teachers and to see that they work under favourable conditions.

to loss of efficiency and enthusiasm when, as not infrequently happens, they are called upon to work under difficult or depressing conditions. Young teachers should not be assigned to classes of special difficulty where experience and skill are required. In rural schools and in small schools generally, there are opportunities for gaining valuable knowledge of individual and group methods.

We think that in both urban and county areas great care should be exercised in allocating young teachers to schools for their probationary year in order to supplement their college training. An effort should be made to utilise small rural schools for probationary experience, provided that such work is done under adequate supervision.

The special needs of Certificated Teachers in Rural Primary Schools.

(90) The increasing number of small reorganised primary schools in rural areas(1) presents a new problem from the point of view of the training of teachers, and it is evident that the preparation of teachers for work in such schools demands more attention from the authorities of training colleges than has hitherto been bestowed on it. Many teachers fresh from training colleges often find themselves in considerable difficulties when confronted with problems and general conditions of work which are different from those with which they have become familiar in urban practising schools during their college course. The small primary schools require a special technique in organisation and teaching based largely on the application of group and individual methods.(2)

We are of opinion that all training courses should afford adequate practice in methods of individual and group work, which are indispensable in rural schools, and are of great importance everywhere. We suggest that the authorities of training colleges should take full advantage of modern transport facilities, and include some small rural primary schools among their centres for teaching practice.

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(1) The latest statistics show that out of 30,522 departments in Public Elementary Schools in England and Wales, 12,085 are in rural parts of county areas; 8,974 of these 12,085 departments do not exceed 100 in average attendance, and the average for all departments in the rural parts of county areas is 81. Of these 8,974 departments, 761 have not over 20 children in average attendance; 995 have between 20 and 30; 1,604 between 30 and 40; and 5,614 have between 40 and 100.

(2) Cf. § 67, pp. 79–82.

Facilities for assisting Certificated Teachers to improve their Teaching Proficiency.

(91) *In general we think that where a third year in a training college is not possible, short courses of the type of existing vacation courses and week-end courses should meet the needs of trained teachers in primary schools who desire to improve their proficiency in teaching.*

Useful guidance is often given to teachers by the organisers and inspectors of local authorities. Such assistance from advisory officers is peculiarly valuable to rural teachers and should in our view be extended. The Board's Inspectors afford useful help in this way, but their duty to their districts as a whole often prevents them from devoting much time to individual schools and individual teachers. Valuable guidance and advice may be given by peripatetic teachers and organisers employed by county authorities to give demonstrations or series of lessons in selected primary schools. We have mentioned in another passage(1) of this report the effective help which may be given in this way by peripatetic organisers who have specialised on modern methods of teaching retarded children. Study circles, organised chiefly by the teachers themselves, and branch meetings of teachers' associations, do much useful work in enabling teachers, especially those in rural primary schools, to pool their experience.

The Training of Teachers for Classes and Groups of Retarded Children.

(92) We understand that most training colleges include in their ordinary courses some general instruction in the methods of teaching dull or backward children or those who develop late, but, as we have shown in the Chapter on Retarded Children, there are many degrees of retardation, and methods suitable for dealing with merely backward children are of little use for pupils who are innately dull. The idea widely held that retarded pupils may be trained by methods suited to normal children of a younger age is erroneous, since the retarded child is not an infant either in years or in physique. Certain features of modern infant school work may however be adapted for use with retarded children, according to the degree and type of retardation. But it is desirable that new and alternative forms of technique should be devised to deal successfully with such children.(2)

(1) Section 71.
(2) See pp. 203-6.

We think that the general problem of teaching such children at the primary stage of education should form an integral part of all courses of training. As regards special courses on modern methods of dealing with young retarded children, we gather that little specific attention has been devoted to this aspect of primary education, except by the Central Association for Mental Welfare. This body, with some assistance from the Board, organises every year courses designed for teachers of retarded children. A few such courses have also been provided by certain local education authorities.

The Board's general view is that teachers who intend to take up work with retarded children should first obtain adequate experience in the teaching of normal children, and with this view we wholly agree. There is however a real need in primary schools for teachers with an adequate knowledge of modern methods and technique for instructing the retarded pupils.

It should be recognised that in dealing with children between the ages of seven and eleven, due care for retarded children is in every way as important as for those that are normal. Since much of the knowledge of child psychology has been derived from the study of retarded children, it is probable that reference to the special problems they create will be made in most courses of training. An intensive knowledge of their needs, however, can be acquired only by supplementary courses imposed upon the foundation course of training. Teachers who deal with a considerable proportion of retarded children, therefore, should have special preparation, and any further training which they undertake to fit themselves for this work, should be regarded as an addition to their professional qualifications.

Uncertificated Teachers in Primary Schools.

(93) Our witnesses pointed out that it was sometimes difficult for county education authorities to induce trained teachers to accept the headships of small rural schools and that this consideration was probably one of the reasons why some county authorities occasionally placed such schools in charge of uncertificated teachers.(1) The evidence submitted by the County Councils Association on this point is of special interest.

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(1) On 31st March, 1929, there were 742 Uncertificated Head Teachers: 372 were in charge of Departments classified as "Junior Mixed," 308 in "Mixed" Departments for pupils of all ages, 62 in Infant Departments. *Education in 1929* (Cmd. 3545), p. 118.

"In the very small schools—and there will be thousands with less than fifty children in them—the task of finding suitable certificated head teachers will be very great so long as it is impossible to deal with the teaching staff on service principles and to promote as a matter of course those who have done well in the small school to the larger. At present a number of the very small schools are staffed with female Uncertificated Head Teachers. In some cases it may be that motives of economy had their part in these arrangements, but there are others in which it has been found impracticable to obtain satisfactory Certificated Teachers. For instance, Salary Scales undoubtedly affect the supply, and again women often find difficulty in securing suitable living accommodation. In consequence of the latter some Authorities have appointed married teachers resident in the area, many of whom have been retired for some time. While we do not advocate the indiscriminate throwing open of the Headship of schools of a given size to Uncertificated Teachers, we are obliged to recall that many of the small schools are being kept going by the employment of Uncertificated Head Teachers. We would urge, however, that if their employment is to continue, such Uncertificated Head Teachers should be specially selected and approved with reference to their personal qualifications and experience."

The views of the County Councils Association on this matter were corroborated by a large number of individual witnesses who had special knowledge of the conditions prevailing in small rural schools. Many of these witnesses emphasised the fact that teachers without high professional qualifications had in many instances successfully fulfilled the difficult task of organising the instruction in small rural primary schools owing to their special knowledge and experience of children and of local conditions.(1) As we have stated previously, we think, however, that it is essential that the head teachers in all schools, however small, should be certificated, and that the employment of uncertificated teachers should be regarded merely as a provisional measure.

Facilities for Uncertificated Teachers to improve their teaching Proficiency.

(94) We consider it most important that Authorities employing uncertificated teachers should encourage them where possible, to qualify themselves for recognition as certificated

(1) Cf. § 67, p. 80.

teachers. *We hold that, in order to facilitate the entry of uncertificated teachers after not too long an interval into training colleges, and especially into colleges developing a rural side, the authorities of such colleges should accept candidates who are suitably qualified.*

Some authorities have established a fund from which a limited number of loans repayable without interest may be made to uncertificated teachers to assist them to undertake a course in a training college for the purpose of obtaining the certificate. This practice is highly commendable, and we think *that authorities which at present do not grant such loans, should consider the possibility of establishing a fund for this purpose. The amount of the loan together with any grants payable under the Regulations for the Training of Teachers should be such as would cover the expenses without undue strain on the teacher.*

We recommend *that, so long as uncertificated teachers continue to be recognised, local education authorities which employ them should take appropriate steps to ensure that they are proficient.* The short courses intended for teachers in primary schools which have been organised by a number of authorities, and the plan of encouraging visits to primary schools noted for good teaching and organisation, are among the arrangements which may be adopted for this purpose.

Supplementary Teachers in Rural Primary Schools.

(95) Statistics show that, on 31 March, 1929, there were 7,462 supplementary teachers(1) teaching classes containing pupils under eleven. Of these 5,565 were in schools in rural parts of county areas. In general it may be said that supplementary teachers are not engaged in full teaching service; inasmuch as they are recognised in a particular school only, their recognition can be withdrawn at any time, and their service is not pensionable. In the small rural schools, however, they render assistance in looking after the young children, and the head teacher is thereby left free to devote more time to the older pupils.

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(1) Schedule II of the Code of Regulations for Public Elementary Schools provides that a supplementary teacher may only teach a class of children of whom the majority are under the age of eight, or (where the average attendance of the school, or of a group of neighbouring schools treated by the Board as one for the purpose, does not exceed 100) the lowest class of older children.

We were informed that authorities frequently experience very considerable difficulty in obtaining teachers for small schools in remoter rural areas. One of the reasons for this appears to be the lack of suitable lodgings. It is accordingly sometimes found convenient to employ a supplementary teacher whose permanent home is near the school. We consider that the employment of supplementary teachers should be regarded as a provisional measure only, and that wherever it is found possible, and at the first opportunity, their place should be taken by trained teachers.

CHAPTER IX.

THE PREMISES AND EQUIPMENT OF PRIMARY SCHOOLS.

PREMISES.

(96) The provision of new school buildings and the adaptation of premises already existing are problems which constantly confront local education authorities and managers in considering schemes of reorganisation based on the break at the age of eleven. Moreover, the question of school buildings and of the size of the classes that may suitably be accommodated in them is inseparably bound up with the problem of the curriculum and methods of study for children at the primary stage, since group and individual work and modern methods of teaching can be applied only with difficulty in old-fashioned and unsuitable buildings.

It is often difficult and costly to adapt existing premises for use as modern schools, which require spacious rooms for practical work and laboratories, and in many instances, it is found to be more economical and satisfactory to construct new buildings. On the other hand, it is generally easier to adapt existing buildings for use as primary schools than as modern schools. In this connection we desire to say that we strongly deprecate any tendency to sacrifice the needs of children below the age of eleven to those of children above that age. Many of our witnesses stated that authorities were sometimes disposed to assign the older and less suitable buildings to the younger children in their plans for reorganisation.(1) Our proposals for reorganisation as set out in the *Report on the Education of the Adolescent* were designed to benefit children below the age of eleven as well as children above that age, and we think *that it is most important that the premises and equipment of primary schools should receive, in proportion to their needs, as much consideration from authorities as schools of the secondary type. We recognise, however, that in the case of primary schools the efforts of authorities will be largely directed to the improvement of existing buildings.*

Many experiments have been and are being carried out in the planning of new buildings for primary schools. We understand that the Board welcome these various experiments and that the absence of any rigid building regulations has

(1) 144 new council schools were opened during the year ended March 31st, 1930. This number included 52 " senior " departments, 59 " junior " departments and 31 infant departments.

been found, on the whole, advantageous. It is of interest to note that the majority of plans for new schools recently passed by the Board provide for single-story buildings. The Board take the view, with which we agree, that in cases where it is proposed to erect a building of two or more stories, or to adapt an existing building of this type, arrangements should be made to provide accommodation for the infant department on the ground floor. The Board consider that there is in general no objection to the department for children between the ages of seven and eleven being housed on an upper floor, provided that the staircases are easy to climb and conveniently placed for safe and rapid exit in case of fire. In planning new schools it is preferable to provide separate departments for infants and for pupils between the ages of seven and eleven. In cases where it is necessary to have a combined school or department for children between the ages of five and eleven, a separate play-room larger than an ordinary classroom should be provided for the younger children. This room might count as a classroom for purposes of accommodation since it would be continuously in use.

Sites for new primary schools should be chosen with great care. Such sites should be open and sunny, removed as far as possible from the noise and dust of roads, and sufficiently large to provide hard playgrounds.(1) Sunlight and fresh air are fundamental needs for young children. School buildings should be placed so as to obtain as much sunlight as possible, and should be cross ventilated. A separate room for medical inspection should be provided in primary schools, and it is also desirable that there should be an assembly hall. Most of our witnesses thought that it was not necessary to make elaborate provision for practical activities in primary schools. As a rule, one or two large rooms with water and gas laid on should suffice for larger schools. In large schools it may often be possible to use the hall for children who take their mid-day meal in the school, provided that a small kitchen is available. In small schools, particularly in rural areas where a large proportion of the pupils come from a distance and have to take their mid-day meal at school, it is in our view most important that adequate facilities for this purpose should be provided. It would appear from our evidence that one of the most urgent needs in schools, particularly those in rural areas, is adequate facilities for drying wet clothes and boots. Our witnesses repeatedly called attention to the risks incurred by children who cannot dry wet clothes or wet boots, and in this connection, the Medical Officers of Schools Association,

(1) And if possible some space for games, cf. § 101.

corroborated by the National Union of Agricultural Workers, pointed out that children under the age of eleven are peculiarly liable to develop rheumatism. It would seem that the most satisfactory way to treat wet clothes is to have a room specially fitted with drying apparatus connected with the central heating system. It is clear that it would be difficult to provide such rooms in smaller schools. Nevertheless, we think that even in such schools adequate facilities for drying wet clothes should be provided. The application of the heat at which clothes may be dried would quickly lead to the deterioration of leather; thus it will be necessary to adopt some different method of drying boots. Special apparatus which provides a moving current of air can be obtained or easily devised for this purpose.

It is clearly essential that there should be an adequate supply of drinking water in all schools. In schools in rural areas where the water is frequently not laid on, a supply of drinking water should be carried to the school each day. Many of our witnesses called attention to the great importance of a supply of hot water and clean towels(1). In planning new schools provision should be made for storing towels.

A number of our witnesses commented upon the poor sanitary arrangements in some of the existing schools. We hope that authorities and managers will make a special effort at an early opportunity to remedy defective sanitary arrangements. Some of our witnesses urged that all new primary schools should be planned on the open air principle. We understand that the best modern designs for primary schools incorporate a number of the features of the open air school, and we think that the plans adopted for new primary schools might well be designed on open air lines.

EQUIPMENT.

(97) *Classrooms should be so furnished that they may be readily adapted for various forms of activity.* Many of our witnesses called attention to the fact that desks of antiquated design are still in use in primary schools, especially those in rural areas. The seats in such desks are often either too high or too low, and the space between the seat and the surface for writing is often wrong. There is sometimes no support for the child's back and the surface of the desk itself slopes unduly and is thus inconvenient for practical work. Ample cupboards which can readily be used for storing (but not for hoarding) should be provided, and there should be a number

(1) These might perhaps be made of paper, and thrown away after use.

of shelves easy of access on which books can be kept. In our Report on *Books in Public Elementary Schools* (1928)(1) we recommended that every pupil should be allowed, at least in school, to retain possession of all books which he is constantly using, and that they should remain in his keeping until the end of the term or year in which he requires them, and we further pointed out that some form of locker was essential. We think it desirable that such lockers should be provided for the older pupils in primary schools.

SCHOOL AND CLASS LIBRARIES.

(98) A permanent collection of supplementary books for general reading and for illustrating various aspects of the school work is quite as important in the primary school as in the various types of secondary school. Many young children below eleven will have no other books except such as may be found at home, as they are usually excluded from the Public Libraries.(2) *The libraries of primary schools should be equipped on as adequate a scale as possible, and the range of subjects should be as comprehensive in small schools as in large.* We have indicated in the sections on different aspects of the curriculum(3) some of the types of book which might with advantage be included in school or class libraries. They should contain a number of story books on topics that specially appeal to young children. Stories about exploration, aircraft, nature study, birds, flowers, and animals, as well as various children's annuals, make a strong appeal to pupils at this stage.

We repeat the suggestion which we made in our *Report on Books in Public Elementary Schools,* 1928,(4) that the head teacher should decide whether it is more satisfactory to keep the whole collection of books together, or to apportion some of them to different classes or groups. We assume that adequate accommodation will be provided for school and class libraries, and that the suggestions regarding their upkeep which we made in section 54 of the report in question, will be borne in mind by the responsible authorities. The fact that the library for the older children of the primary school

(1) Page 102.
(2) It should be mentioned that several local education authorities have drawn up reading schemes for young children, e.g. " A Scheme for encouraging Home Reading of Suitable Literature by Children in Attendance at Elementary Schools," published by the Yorkshire (West Riding) Education Committee.
(3) Pages 150–206.
(4) Page 74.

will consist of simple books intended for reading rather than for reference, will affect both the question of binding such publications and of equipment for their accommodation and preservation.

Our witnesses were, on the whole, of opinion that in the larger primary schools class libraries were preferable to school libraries. There is force in the argument that the class teacher will know the needs of the pupils better than anyone else, and that it is possible to use this knowledge to greater advantage when an adequate collection of books is available in the class room, rather than in a general school library.

VISUAL AND AUDITORY AIDS TO TEACHING.

(99) Pictorial illustration is so necessary in the case of young children to ensure any clear mental conception of many of the terms with which they will meet in the course of their lessons or reading, that equipment for the purpose should be regarded as essential in the primary school. This equipment should include not only a supply of pictures for use in demonstration to a whole class, but a liberal supply of smaller pictures for group or individual use.(1)

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(1) We have in mind such pictures and views as are included in the series of postcards published by the national museums, art galleries and other similar institutions. Descriptive price lists of such photogravures and picture postcards with letterpress may as a rule be obtained by writing to the Director, Curator or Secretary of the institution in question. The full postal addresses of some of the more important of these institutions are as follows :—

The British Museum ..	The Director, British Museum, London, W.C.1.
The British Museum (Natural History)	The Director, British Museum (Natural History), Cromwell Road, London, S.W.7.
The Victoria and Albert Museum	The Director, Victoria and Albert Museum, South Kensington, London, S.W.7.
The National Museum of Wales	The Director, National Museum of Wales, Cardiff.
The Imperial Institute ..	The Director, Imperial Institute, South Kensington, London, S.W.7.
The Science Museum ..	The Director, Science Museum, South Kensington, London, S.W.7.
The Royal Botanic Gardens	The Curator, Royal Botanic Gardens, Kew, Surrey.
The National Gallery ..	The Director, National Gallery, Trafalgar Square, London, W.C.2.
The National Portrait Gallery	The Secretary, National Portrait Gallery, St. Martin's Place, Charing Cross, London, W.C.2.

Further information about other institutions which publish pictures of this character is given in the footnote on pages 22 and 23 of the Consultative Committee's *Report on Books in Public Elementary Schools* (1928).

For class use the ordinary magic lantern is invaluable, and we recommend that one or two rooms in the school should be fitted in such a way that slides can be exhibited with the minimum of fuss and waste of time, and that a lantern should, wherever possible, be provided. To equip a school with a small number of stereoscopes is an inexpensive but invaluable aid for the use of pictures by individual children or by small groups.

This section would be incomplete if we said nothing about the possibilities of making use of the film and of broadcasting in the primary school. Both are great educational forces; both play a large part in the life of to-day, even in that of children, and both are capable of exerting so strong and cultural an effect on the population as a whole that their claims to a place in the educational machinery of the school cannot be resisted. What that place may be is still uncertain, and far more experiment than has been attempted as yet is necessary before any confident conclusion can be reached. One thing, however, is clear. Both are essentially methods of class instruction, and in so far as the methods of the primary school tend to deal with the child as an individual, or with small groups of children engaged on a common task, the spheres of utility of both film and broadcasting will be reduced. Their function is likely to be most fruitful in connection with the class lessons, and especially with those activities of the school which aim at arousing new interests. Broadcasting also has an obvious place in the training of appreciation, and the film in giving vivid visual impressions of unfamiliar things and processes. Neither the film nor broadcasting can claim to supplant the teacher, or to determine the contents of the curriculum; they must enter the school as interpreters, not as dictators, of what is to be taught there.

The piano has long been regarded as an essential part of the school equipment, and to this must be added the gramophone. In the primary school its chief use is to habituate children to hearing beautiful music finely rendered and thus lead them to understand and love music. We regard this as a highly important educational service.(1)

SHORT VISITS TO PLACES OF INTEREST IN THE NEIGHBOURHOOD.

(100) In many primary schools it is the practice for teachers to take the pupils for short rambles in connection with the study of nature, and also to organise visits from time to time

(1) See also the section on Music, p. 188.

to places of historic or geographical interest in the neighbourhood, museums, art galleries, and the like. Most of our teacher witnesses thought that short visits and rambles of this character, if properly supervised, were of great use in the education of young children, and we have no hesitation in recommending strongly the practice of taking children under the age of eleven to visit such places when they are readily accessible from the school and involve only a few hours' absence.

PLAYING FIELDS.

(101) The Board of Education have recently issued a pamphlet on School Playing Fields.(1) It is pointed out in this pamphlet that, though the advantages derived from a playing field in addition to the usual hard playground are probably greater during the later years of school life, younger children also benefit from the open space and healthy surroundings afforded by a grass playing-field. We think that although games(2) are as important at the primary stage of education as at the secondary stage, nevertheless the organised games as practised in schools for children over the age of eleven may sometimes be out of place in the primary school, especially for the younger pupils.(3) Appropriate arrangements may, however, be made for free play, and we hope that the needs of pupils under the age of eleven in this matter, particularly in urban areas, will not be overlooked. It is particularly desirable that the playing-fields for primary schools should, wherever possible, be near the school buildings.

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1) *School Playing Fields.* Board of Education educational pamphlet No. 80 (1930).

(2) See also the section on Physical Training and Games, page 200.

(3) Organised games in the primary school may include many round games or smaller group games, such as netball, stoolball and postball, which afford essential training for the bigger national games, and which can be played on any fairly level open space.

CHAPTER X.

EXAMINATIONS IN PRIMARY SCHOOLS.

THE CLASSIFICATION OF ENTRANTS FROM THE INFANT SCHOOL TO THE UPPER STAGE OF PRIMARY EDUCATION.

(102) We have already expressed the view in Chapter IV that children ought to be transferred from the infant department to the upper department of the primary school at some time between the ages of seven and eight. At this early age tests of attainment in formal subjects may be an inadequate guide to a child's true capacity. Age of entrance, home training, absence from school, and many other factors, prevent children from having equal opportunities during the infant stage. *Accordingly this is one of the stages at which teachers may usefully apply intelligence tests.* These need not be technical tests from a recognised scale; they may be simple problems modelled after those in the Binet-Simon Series, and might usefully be supplemented by standardised scholastic tests in reading and the easier processes of arithmetic.(1) Unless the capacity of the more intelligent child is recognised from the start, there is a danger that he may be promoted at the ordinary pace, and that then, when he is discovered to be below his true level, he may be hurried through the higher classes. *In classifying pupils leaving the infant school full use should also be made of the school record and of consultation between the teachers concerned. It is, in our view, highly desirable that the classification of these young children should be regarded as merely provisional, and should be subject to frequent revision.*(2) This applies especially to children of varying degrees of retardation.

THE FREE PLACE EXAMINATION IN THE PRIMARY SCHOOL.

(103) In Chapter VII of the *Report on the Education of the Adolescent* (1926) we have discussed at some length the question of free place examinations and examinations for

(1) See Recommendation No. 19 (page 140) of the Consultative Committee's *Report on Psychological Tests of Educable Capacity* (1924).

(2) See also page 78.

admission to selective modern schools.(1) In that chapter the problem was considered primarily from the point of view of secondary education. Since then, the general subject of these examinations has been discussed in the *Memorandum on Examinations for Scholarships and Free Places in Secondary Schools*, published by the Board of Education in 1928; in the *Memorandum on Entrance Tests for admission to Secondary Schools* issued by the Welsh Department of the Board of Education (1930), and in the *Report on Examinations in Public Elementary Schools* published in 1930 by the Joint Advisory Committee of the Association of Education Committees and the National Union of Teachers. As most of the ground has thus been explored, we do not propose to consider here in detail the conduct of free place examinations; we are principally concerned with them in their bearing on the work of the primary school.

As the provision of various types of secondary education is extended in the manner proposed in our *Report on the Education of the Adolescent*, the necessity for selecting by competition the children who will pass on to grammar schools and to selective modern schools, will be diminished. It seems certain, however, that some qualifying examination or test will always be required for the purpose of classifying pupils.

THE SCOPE OF EXISTING FREE PLACE EXAMINATIONS.

(104) During the last few years general examinations of children in public elementary schools at the age of about eleven have been increasingly used, not only for the award of free places, but for the admission of fee-paying pupils to grammar schools and of entrants to modern schools. In more than half of the 75 administrative areas included in the inquiry which is summarised in the Board's *Memorandum on Free Place Examinations* (1928), the examination was compulsory, i.e. all children in public elementary schools eligible under the conditions prescribed in each case were expected to take it.

When the examination is voluntary there is a very considerable risk of passing over candidates who are really suitable. It would appear also that compulsory examinations

(1) Cf. also Recommendation No. 20 (page 178) of the Consultative Committee's *Report on the Education of the Adolescent* (1926).

are the most practical means of co-ordinating grammar school awards with admissions to selective modern schools. It is clear that difficulties must inevitably arise when an authority whose powers are limited to elementary education conducts a separate entrance examination for its own selective modern schools. In the interests of the children it is important that these difficulties should be surmounted, and that the number of such examinations should be reduced by agreement between neighbouring authorities.

THE PRACTICE OF HOLDING THE EXAMINATION IN ONE OR IN TWO STAGES.

(105) In Sections 146–7 of the *Report on the Education of the Adolescent*, we described at some length the practice which prevails among many authorities where there are a large number of candidates, of holding the examination in two stages :(1) (*a*) the preliminary examination in English and arithmetic, which is often held in the local schools, and (*b*) the second or free place examination proper, held at some convenient centre or centres in the area.

We recognise that where the number of candidates is large it may frequently be found necessary to organise the examination in two stages.(2) In areas where this arrangement is adopted, we consider it most important that the first or eliminative stage should not be regarded as a qualifying test, but should be designed to reject only those candidates whom it is clearly not worth while to examine further. To this end, the eliminative examination should be carefully standardised in the individual schools. We would accordingly urge that in cases where the examination is divided into two parts, the rejections at the first (or eliminative) stage of the examination should not be too numerous, so that candidates with as wide a range of capacity and attainment as possible may be included

(1) It should be mentioned that in a few areas an oral examination or an oral test imposed independently by the grammar schools operates in effect as a third stage of the free place examination.

(2) The County Councils Association informed us that, in a large proportion of the 37 county authorities which had replied to their questionnaire issued in 1929, a general examination was usually held, and that in most cases the children in the age groups of 10–11 and 11–12 were examined. This examination was rarely that on which the award of free places was made, but was frequently used as a preliminary examination to select candidates for the free place examination proper.

among those tested in the second (or selective) part of the examination.(1) Furthermore, it is essential that any parent who desires may present his child for the second examination whatever the child's performance in the preliminary (eliminative) examination may have been.

In the light of our evidence, we agree with the view expressed in the Board's *Memorandum on Free Place Examinations*, that *there is generally less risk of overlooking suitable candidates if the examination is held in one stage only. In cases, however, where the examination is held in two stages, the first, or internal, stage should be general and compulsory.*

SUBJECTS OF THE WRITTEN EXAMINATION.

(106) The obligatory written papers of the free place examination are confined to English and arithmetic. The inquiry by the Board's Inspectors, summarised in the *Memorandum on Free Place Examinations* (1928) shows that some authorities included a substantial test in history and geography, either as part of a general paper, or in a separate history and geography paper. Dictation formed part of the English test in some areas; spelling was tested separately in one area; questions on nature study occurred in a few examinations; and in one instance there were optional questions on domestic subjects. The virtual limitation of the examination to English and arithmetic was criticised by a large number of our witnesses on two grounds: (*a*) that concentration of attention on these two subjects tended to disturb the balance of the course: further that there are sometimes children of mediocre capacity who can be successfully coached in arithmetic, so that achievement in a written examination often affords no satisfactory indication of their actual ability: (*b*) several groups of witnesses, including the County Councils Association, pointed out that there were artistic, practical, and other types of ability(2) which were not expressed in English or arithmetic. The County Councils Association, therefore, thought that, in order to encourage the all-round development which should

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(1) It should be mentioned that in the areas of some authorities, numbers of children are not regarded as eligible for presentation at the free place examination, if they have not reached a certain minimum of attainment. For instance, in London children who have not reached a stage corresponding to standard IV by the minimum age fixed by the Authority are not presented for the preliminary examination.

(2) See also Section 110.

characterise the primary school, care should be exercised not wholly to ignore in examinations aspects of the curriculum other than English and arithmetic.(1)

On the evidence before us, we consider that *carefully devised papers in English and arithmetic*(2) *should be sufficient as a basic test of capacity and attainment for children at the age of eleven. We think, however, that the object of a final selective examination should be primarily to assess capacity, though the importance of a certain measure of attainment must not be ignored.*

THE USE OF GROUP INTELLIGENCE TESTS.

(107) Since the primary purpose of the examination should be to test general capacity and ability to profit by continued education in a grammar school or a selective modern school, it is clearly important that attempts should be made to gauge these qualities apart from general attainment in English and arithmetic. The evidence shews that in recent years much trouble has been taken in many areas to include a certain number of questions designed primarily to discover and assess intelligence. In addition to this incidental method of discovering intelligence, some authorities have added a group intelligence test. In our opinion *carefully devised group intelligence tests may be a useful factor in selection, but it would be inadvisable to rely on such tests alone.* In this context, we would reiterate the opinion that we have already expressed in the *Report on Psychological Tests of Educable Capacity* (1924)(3) that these new psychological tests may probably exercise an important influence on examinations of the ordinary type. On the other hand, if questions in external examinations for children at the age of eleven were always set with due regard to the peculiarities of the child mind, both in the form and matter of the questions and in their arrangement in the written papers, and if the same scientific methods were

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(1) In framing the examination the special characteristics also of other types of primary education, e.g., private preparatory schools, may have in some areas to be taken into account.

(2) As regards the type of question which should be avoided in arithmetic papers, see the section on arithmetic and simple geometry, page 182.

(3) See Consultative Committee's *Report on Psychological Tests of Educable Capacity* (1924). Recommendations Nos. 20 and 21 (pages 140–1).

employed as in intelligence tests and standardised scholastic tests, such examinations would prove a more effective means of discovering ability in young children than those now in use.

ORAL TESTS.

(108) The evidence shows that the use made of oral tests varies greatly. Sometimes they constitute an integral part of the examination for all candidates, or for all who attain a certain level in the written papers, while in other cases they are employed only for discriminating between candidates near the border-line of success or failure. Again, in some areas arrangements are made for controlling and standardising the work of the panel of oral examiners, while in other areas the final award is settled by oral tests conducted independently by the grammar schools. There is also great variation in the influence of oral tests on the final results. Many of the difficulties inherent in oral examinations might be avoided if individual psychological tests were applied as supplementary to the ordinary oral examination. In connection with the possible use of individual tests of intelligence at oral examinations, we desire to emphasise our opinion that more attention should be devoted by teachers and psychologists to a clear definition of the precise aims, functions and limitations of oral examinations generally and to the proper development of their technique.(1)

There is evidence in the experience of some authorities that close study of the technique of the interview and of the means for standardising the procedure of oral examiners may produce reliable results. In one particular case, the visiting boards consist of practising teachers drawn from primary schools and secondary schools of various types, and these boards are responsible, in collaboration with the head teachers concerned, for the final classification of candidates. The data at their disposal are the marks awarded in a written examination, the marks (separately recorded) of a group intelligence test, the standardised tests used at the interview, the school record, and the head teacher's estimate. Even in this case, however, experience has shown the necessity of referring to a single referee, usually the examiner-in-chief, a few border-line

(1) Cf. the Consultative Committee's *Report on Psychological Tests of Educable Capacity* (1924), § 78 (*c*), (page 120) where it is pointed out that individual psychological tests should only be set in those cases where a qualified person is available.

candidates in regard to whom there is not complete agreement with the opinion of the head teacher. These remaining candidates are again visited in their schools, and a further consultation between the head teacher and the chief examiner is held before the final classification is made.

In general, we think that *in examinations which set out primarily to discover ability, weight should be attached to the results of a properly conducted oral test.*(1)

SCHOOL RECORDS.

(109) In many free place examinations, and always in areas where an interview forms part of the selective examination, weight is given to school records. Nothing is more reliable than the personal judgment of observant and impartial teachers who have been in contact with their pupils over a period of years; even though, in a comparative estimate of pupils drawn from a large number of schools, this personal judgment, as we have already implied, must be related to some general standard of ability and attainment. We accordingly urge that *some form of continuous record of each child's progress should be kept in primary schools. We consider that further inquiry is desirable, in order to determine the most convenient form in which the necessary information may be concisely presented.*

SPECIAL APTITUDES.

(110) The evidence indicates that methods of discovering and assessing special aptitudes, as distinct from that "general intelligence" which is gauged in some degree by intelligence tests,(2) have not yet been developed to any great extent. It is doubtful too whether permanent aptitudes and interests of a specialised kind have, as a rule, emerged sufficiently by the age of eleven to justify taking them into account in a selective examination.(3) The assessment of special abilities will, however, become more important as secondary schools of varied type are more fully developed. The teacher's prediction will prove to be the most valuable guide. This again emphasizes the need for carefully kept school records.

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(1) Cf. Recommendation No. 22 of the Consultative Committee's *Report on Psychological Tests of Educable Capacity* (1924).

(2) Cf. Consultative Committee's *Report on Psychological Tests of Educable Capacity* (1924), Sections 53–56, pages 67–77.

(3) See also Section 106.

ARRANGEMENTS FOR STIMULATING THE INTEREST OF PARENTS IN THEIR CHILDREN'S PROGRESS IN THE PRIMARY SCHOOL, AND IN FACILITIES FOR SECONDARY EDUCATION.

(111) *In order to enlist the interest of parents in the progress of their children a terminal or annual report should be sent to them.* This report should contain the essential information which a parent is entitled to receive, and should be based largely on the school record.(1) It is especially important that the parents' interest in the progress of their children should be secured at the stage when they are presented for the general examination at the age of eleven. Parents should be enabled to understand in broad outline the salient features of the education offered in grammar schools and in modern schools, whether selective or non-selective, and the range of occupations open to pupils from these various types of secondary school. *To this end, authorities might issue (as some do) for circulation to parents short statements setting out in clear and simple language the facilities for secondary education that are available in the area concerned.*

GENERAL SUMMARY.

(112) The "free place" examination was established primarily to discover those pupils who appeared to be qualified to proceed at about the age of eleven to grammar schools. Under some education authorities it still bears marks of its origin, in that its class lists contain a large division of "qualified" candidates, and a more select division of "free place" or "scholarship" candidates. It was thought (and, as experience has shown, it was rightly thought) that a parent would be more encouraged to send his child to a grammar school after he had received evidence of the child's ability. Accordingly, the examination was made general and within certain limits compulsory. As education of a secondary type was more fully developed, the necessity for a classification of primary school pupils became more pronounced, both for the award of scholarships in grammar schools and for admission to modern schools. We hesitate to predict the ultimate development of the system, or to conjecture what features of it may prove to have the most lasting value; the varied practice of education authorities, and the changes that have been introduced from year to year in the conduct of the

(1) See also p. 203.

examination by those authorities which have given special thought and care to it, are evidence that the stage of experiment is not yet past.

Criticism of the system in its experimental stage turns often upon characteristics which are present in some forms of examination but not in all, or is evoked by a prejudice against examinations of any kind. Nevertheless, there is evidence to show that unremitting attention should be given to improvement in the technique of the examination. Teacher witnesses have stated that free place examinations have been largely responsible for the continuance of faulty perspective in the general plan of primary education. It is true that undue concentration on arithmetic may be traced as far back as the Code of 1862, but it is equally true that this is being continued in many schools owing to the indirect pressure of the examination, and to the types of question which are still frequently used. *The conception of the primary school and its curriculum must not be falsified or distorted by any form of school test whether external or internal; the technique of examination must accordingly be so developed that it keeps abreast of that steady process of humanising and broadening the course of study in the primary school which is the theme of this Report.* Not only so, but the written part of the examination, both in its scholastic tests and its tests of general intelligence, must find its justification mainly in the setting up of some general standard of ability and attainment to which the teacher's own estimate of a pupil may be related. *One direction in which the right kind of examination will clearly develop, is in the increasing importance that it will attach to the school record and the teacher's estimate in the final classification of pupils, provided that this is related to some general standard of ability and attainment.* This course of development will ensure against the warping of the curriculum, special preparation, and undue pressure in the upper range of primary education; and so remove many of the causes of dissatisfaction that have been mentioned by our witnesses. In the meantime, authorities should be firm and consistent in their discouragement of special preparation of any kind, while by their own practice in the gradual development of the examination they will seek to prevent it. There remains, however, one grave cause of dissatisfaction which inheres to any external method of classifying pupils that may be adopted. It arises from an exaggerated faith in examinations as a criterion of the efficiency of a school. No examination, by itself, can appraise

all the activities of a school; no adequate estimate of these can be formed except by inspection; and any testing of pupils which may be used as ancillary to inspection must be different in character from that which we are now considering. *We cannot too strongly deprecate the tendency to base a comparative estimate of the efficiency of schools upon the class lists of a selective "free place" examination.*

CHAPTER XI.

SUMMARY OF PRINCIPAL CONCLUSIONS AND RECOMMENDATIONS.

(113) Our conclusions and recommendations are as follows :—

I.—Conclusion based on the Historical Chapter.

1. In the evolution of educational theory and practice in England and Wales since the beginning of the last century the conception of the primary school for children between the ages of five and eleven, with a separate organisation, where possible, for those between the ages of seven and eleven, marks a new departure and brings with it new problems. To-day primary education is recognised as ending at about the age of eleven ; secondary education of various types is that which follows ; and the importance of considering the education of children in primary schools as something which must have a character of its own, arises from these facts. (Chapter I, § 24.)

II.—Age Limits and Organisation.

The upper age limit for primary education.

2. We adhere to the view stated in our *Report on the Education of the Adolescent* (1926) that primary education should be regarded as ending at the age of eleven, and that normally all children should go forward at that age to some form of secondary education. We accordingly consider that, in the interests of primary and secondary education alike, the transfer from the primary school to the secondary school should take place some time between the ages of eleven and twelve. (Chapter IV, § 49.)

The organisation of primary education.

3. Primary education may be said to fall into two well-marked stages—one extending up to the age of seven *plus*, and the other comprising the period between the ages of seven *plus* and eleven *plus*. (Chapter V, § 62.)

In areas where it is possible, there should be separate schools for children under the age of seven. In rural areas, the majority of the schools for young children must often be organised as primary schools for pupils between the ages of

five and eleven. We think, however, that in all primary schools containing children up to the age of eleven, including even small rural schools, there should be a well-defined line of demarcation between the younger and older children. To this end, wherever possible, the infants should be placed under the care of a mistress with special responsibility and special knowledge of modern methods appropriate to this stage. (See also recommendation No. 8.) (Chapter IV, § 57.)

Co-operation between the two sections of the primary school.

4. In all cases where there are separate schools for children below the age of seven and for children above that age, a close connection should be maintained between both schools, and frequent staff meetings should be held, attended by both sets of teachers. (Chapter IV, § 60.)

Co-operation between primary schools and secondary schools of different types.

5. It is most important that teachers in all types of secondary school should keep in close touch with the teachers of the contributory primary schools, e.g. by means of periodical conferences. (Chapter IV, § 61.)

The transition from the lower stage to the upper stage of primary education.

6. It is important that the transition from the general treatment and methods of teaching in use in infant schools to those in use in the next stage of primary education should be easy and gradual, and that the teachers of the lower classes in the latter should have some knowledge of infant school methods. Under these conditions there is, in our opinion, no good reason why promotion from the infant school should not be made between the ages of seven and eight. (Chapter IV, §§ 53, 55 and 58, and Chapter V, § 63.)

The classification of children between the ages of seven and eleven.

7. The break at the age of eleven has rendered possible a more thorough classification of children. It is important that this opportunity should be turned to the fullest account. In particular the needs of the specially bright and of retarded

children should be met by appropriate arrangements. The range of curriculum for specially gifted children need not differ greatly from that hitherto in vogue in some " all-age " elementary schools. (See also recommendation No. 19.) (Chapter V, § 66.)

The internal organisation of rural primary schools.

8. We consider that the differences between rural and urban schools are often exaggerated, though the primary school in rural areas presents some problems of its own. It is clear that the curriculum which is possible for children between the ages of seven and eleven, depends to a large extent on the general character and scope of the instruction given in the infant classes in such primary schools. In small country schools it is doubtless difficult for one teacher to devote adequate attention to the infants and at the same time to give appropriate instruction to the different groups or sets of children between the ages of seven and eleven. We would accordingly urge that, wherever the numbers justify, there should be a responsible assistant to take charge of the infants. (See also recommendation No. 3.) (Chapter V, § 67.)

The question of co-education for children between the ages of seven and eleven.

9. There is no valid objection on general sociological and educational grounds to " mixed " primary schools, provided that due regard be paid to the differing needs of the boys and girls in the matter of games and physical exercises. (Chapter V, § 65.) (cf. recommendations Nos. 16, 17 and 18.)

III.—Conclusions and recommendations based on the evidence regarding the physical development of boys and girls between the ages of seven and eleven.

10. The period between the ages of seven and eleven constitutes a stage of vital importance in the growth of the human organism. It is the business of the primary school to provide appropriate educational treatment. (Chapter II, *passim.*)

11. The stage between seven and eleven may justly be regarded as affording the best opportunity under existing conditions for making good past defects in the development of young children, and preparing them for the heavy demands entailed by rapid growth during puberty. (Chapter II, § 28.)

12. The study of the growth of the child's organism provides definite indications in regard to the physical strain and burdens which may safely and properly be imposed on it at successive stages. These indications have an important bearing on the suitability of various games, exercises and physical tasks for boys and girls. (Chapter II, § 29.)

13. It is important both for the physical well-being of individual boys and girls and for their educational progress, that any salient features of their physical development should be noted not only on their medical cards, but also on their school records. It is, however, essential that any information of this character entered on the school records should be treated as strictly confidential. (Chapter II, §§ 28, 30 and 31.)

14. Teachers in primary schools should be on the alert to detect even slight defects in vision or hearing, or any nervous peculiarities that may have escaped the notice of the school medical officers or of the teachers in the infant school, as such defects are responsible for much so-called backwardness in young children. (Chapter III, § 36.)

15. Acute infectious diseases are on the whole less common in children between the ages of seven and eleven than in younger children, but chronic *sequelae* from preceding acute infections may be observed in many pupils at this period. It is accordingly most important that children during the successive stages of convalescence should not be unduly pressed with school work. (Chapter II, §§ 28 and 30.)

Sex differences in children between the ages of seven and eleven.

16. The conventional view of the period between the ages of seven and eleven as a " neutral age " is incorrect, as recent physiological researches indicate that sex differences should not be ignored at this stage of so-called " neutral " childhood. (Chapter II, § 33.)

17. One of the most important of these differences is the relatively greater liability of girls to fatigue. It seems desirable that even at this early stage appropriate games and appropriate physical exercises should be provided for the girls. The provision of adequate facilities for rest is also important, especially for girls. (Chapter II, §§ 29 and 33, and Chapter III, § 36.)

18. The evidence from psychologists and teachers indicates that though on the intellectual side sex differences at this period are so small as to be almost negligible, yet on the emotional side, the interests of the boy and of the girl are moving further and further apart. (Chapter III, § 47.)

IV.—Conclusions and suggestions based on the evidence regarding the mental growth of children between the ages of seven and eleven.

The range of difference in intellectual capacity in children up to the age of eleven.

19. Older children differ far more widely in intellectual capacity than younger children. It would, therefore, seem that while at the infant stage children may be grouped together without much regard to varying degrees of mental endowment, by the age of ten pupils in a single age group should be classified in several sections, though there is not the same need for elaborate gradations before the age of eleven as after that age. (See also recommendation No. 7.) (Chapter III, § 35.)

20. While the evidence indicates that, in general, there are no sudden breaks in the intellectual and emotional development of young children, nevertheless the period between the ages of seven and eleven displays features which render it desirable, that it should be treated as a distinct stage in education. (See also recommendation No. 10.) (Chapter III, *passim.*)

Attention.

21. The scope of attention in young children appears to be very limited, as they are lacking in the power of mental organisation. The child's power of sustaining voluntary attention increases rapidly between the ages of seven and eleven. A child's interest, but not necessarily his capacity, is rapidly exhausted at this period, but his attention will be sustained, if the matter presented be limited to a few simple ideas, and if freedom of movement and plenty of change be allowed during the lesson. (Chapter III, § 37.)

Memory.

22. The traditional view, still widely held, that memory is specially strong in young children and that the primary stage is pre-eminently the time for a great deal of routine work,

requires large qualification. Reliance should be placed at this stage not only on mechanical memory, but also on that aspect of memory which is assisted by reasoning and understanding. (Chapter III, § 37.)

Imagery and ideas.

23. Up to the age of eleven the school subjects and their presentation should be kept closely related to the children's concrete knowledge and their own immediate experience. At this stage the teaching should still be based directly upon what the pupil can perceive or recollect at first hand, usually in visual form, and not upon abstract generalisations or theoretical principles. It is accordingly important, as children pass from the infant school into the upper part of the primary school, that they should gradually be taught to bring to bear on the world of experience the constructive imagination which has been and is being cultivated in the world of " make-believe." (Chapter III, § 38.)

Reasoning.

24. The power of reasoning in children between the ages of seven and eleven appears to be more highly developed than is generally supposed. (See also recommendation No. 22.) (Chapter III, § 41.)

Susceptibility to suggestion.

25. The susceptibility of the young child to suggestion is due not so much to lack of reasoning power as to lack of organised knowledge. (Chapter III, § 41.)

Other characteristics.

26. Among other noticeable characteristics in children at this stage are curiosity, " matter-of-factness," and, particularly from about the age of nine onwards, the love of constructive work and the desire to handle or to shape something which is new. (Chapter III, §§ 43 to 46.)

Aesthetic appreciation.

27. The capacity for genuine aesthetic appreciation is but little developed in the majority of children at this stage, but it is steadily growing, as they approach the age of eleven. The children's own efforts through their productions in the various

media should be the most potent influence in the development of a sense of beauty ; they are more potent than formal talks on beauty, or attempts to arouse prematurely the kind of appreciation which is appropriate only at later stages. The effect of seeing and hearing beautiful things must not be depreciated. (Chapter III, § 42.)

The need for further research regarding the physical and mental development of children between the ages of seven and eleven.

28. We suggest that steps should be taken to investigate in greater detail the physical and mental development of children at this age period. (Chapters II and III, *passim*.)

V.—The curriculum for the primary stage in education.

29. Though in framing the curriculum for children between the ages of seven and eleven, it is necessary to build upon the foundations laid in the infant school and to keep in view the importance of continuity with the work of the secondary school, the main care must be to supply the pupils with what is essential to their healthy growth, physical, intellectual and moral, during this stage of their development. (Chapter VII, § 74.)

30. We are of opinion that the curriculum of the primary school is to be thought of in terms of activity and experience, rather than of knowledge to be acquired and facts to be stored. (Chapter VII, § 75.)

31. An important feature of it should be physical training, the term being used to include not only exercises subserving physical health and efficiency, but also those which tend to produce good carriage and graceful movement. (Chapter VII, § 76.)

32. Language training should be regarded as fundamentally important. It should be based upon well-planned and systematic training in oral expression. Dialectal peculiarities are not all to be suppressed, but children should be taught to speak standard English, and in Welsh-speaking districts Welsh, with grammatical correctness and careful enunciation. (Chapter VII, § 77.) (Cf. pp. 166-7.)

33. The cultivation of the children's aesthetic sensibility through drawing, craft-work, and music, and the development of their manual skill should receive careful attention. The

cultivation of handwriting which is beautiful as well as legible, is important. (See also recommendation No. 27.) (Chapter VII, §§ 78 and 79.)

34. The traditional practice of dividing the matter of primary instruction into separate "subjects", taught in distinct lessons, should be reconsidered. The treatment of a series of central topics which have relations with many subjects, may be a useful alternative. It is, however, essential that provision should be made for an adequate amount of " drill " in reading, writing and arithmetic. (Chapter VII, §§ 83 to 86.) (cf. Chapter III, § 37, p. 40 and § 41.)

VI.—Retarded Children.

Differentiation between mentally defective children and children whose mental development is merely retarded.

35. Children may be broadly classified in respect of their natural capacity into (*a*) those that are highly gifted, i.e. super-normal, (*b*) those of average ability, i.e. normal, and (*c*) those whose ability is below the average, i.e. sub-normal. In the light of recent research the class of sub-normal children must be further divided into those who are (i) mentally defective, or (ii) retarded in mental development. Of those who are thus retarded some are more retarded, and some less. (Chapter VI, § 68.)

36. We accept the recommendations of the *Report on Mental Deficiency* made by the Joint Committee of the Board of Education and the Board of Control (1929) that it is most important to differentiate between mentally defective children and those whose mental development is merely retarded in a greater or less degree. We agree with the Joint Committee in recognising three classes of sub-normal children :—

(i) Those children whose mental age is below half their chronological age, e.g. in the case of children of the chronological age of ten, those whose mental age is below five. These we propose to call " mentally defective " children.(1)

(ii) (*a*) Those children whose mental age is above half and below seven-tenths of their chronological age, e.g. in the case

(1) It is necessary to emphasize the fact that the restriction of the term " Mentally Defective " to children in this group is recommended for administrative purposes only.

of children of the chronological age of ten, those whose mental age lies between five and seven. These we propose to call " more retarded " children.(1)

(*b*) Those children whose mental age lies between seven and eight-tenths of their chronological age, i.e. in the case of children of the chronological age of ten, those whose mental age lies between seven and eight. These we propose to call " less retarded " children. (Chapter VI, § 68.)

The development of differences in mental capacity in children.

37. Recent researches, based on the application of " intelligence " and other tests, indicate that innate differences between individual children increase in direct proportion to their age. For instance, a child who is backward by one year at the age of five, will probably be backward by two years at the age of ten, and by three years at the age of fifteen. By the age of eleven, the innate differences between individual children become so wide that various types of secondary education are needed. (Chapter VI, § 68.)

Appropriate provision for retarded children at the primary stage.

38. We strongly endorse the recommendation of the Joint Committee that retarded children should be recognised as requiring special attention between the ages of seven and eleven. (Chapter VI, § 72.)

The importance of early detection of the causes of retardation.

39. It is most important, in the interests of retarded children, that the main causes of their retardation should be discovered at as early a stage as possible in their school career. We suggest that the teachers in schools for pupils between the ages of seven and eleven should discuss with the teachers of infant schools the previous school history of retarded children, and to this end we think that the practice of passing on a brief report on each pupil is greatly to be commended. In cases of obvious retardation, the head teacher of the primary school, in association with the class teacher, would be well advised to search for the principal cause or causes of retardation in each instance. It is probable that in some cases the teacher will require the assistance of the school medical officer, the school nurse, parents or guardians, and where available,

(1) These correspond broadly with those hitherto classed as " educable mentally defective " children.

the psychologist. We regard it as particularly desirable in cases of retardation that the head teacher should get into touch with the parents in an attempt to counteract any cause of retardation connected with the child's home conditions and environment. The child guidance clinics which are now being organised in some urban areas, could render valuable assistance in cases of this kind. (Chapter VI, § 70.)

The Education of "More Retarded" Children.

40. The category of pupils known as "more retarded" (sometimes described as "educable defective") is comparatively small. "Special schools" for such pupils should be closely related to the general educational system, while preserving freedom to provide for the educational requirements of particular types of children. Such "special schools" should be large enough to allow of the proper grading of pupils, in order that the children may have full opportunities to develop such potentialities as they possess. In large portions of England and Wales the numbers of "more retarded" children to be found in a given district, will be too small to justify the establishment of "special schools." The children will have to be cared for in the local schools; or, where special classes for the "less retarded" children are formed, they may be included in these classes. In any case it should be possible to engage a teacher with a knowledge of "special school" methods who will visit the local schools and, in conjunction with the class teacher, will plan courses of education suitable for the few children who have to be classed as "more retarded." (Chapter VI, § 71.)

The Education of "Less Retarded" Children.

41. We have included in our Report certain sections dealing with the classification of, and appropriate curricula and methods of teaching, for the "less retarded" (commonly known as "dull or backward") children, who in all areas will be retained within the primary school itself. (Chapter V, §§ 66–7, Chapter VI, § 72, and pages 203–6.)

The size of classes containing retarded children.

42. Classes which are specially organised for retarded pupils, or those which contain any considerable proportion of such children, should be small. (Chapter VI, § 72.)

VII.—Staffing and Training of Teachers.

The Relation of the size of Classes to Staffing.

43. The general lines of the staffing of primary schools should be determined by the consideration that none of the classes should contain more than 40 children. (Chapter V, § 64 and Chapter VIII, § 87.)

Staffing of Primary Schools.

44. In schools and departments for children between the ages of seven and eleven the earlier work should be conducted by teachers who have had some experience in schools for infants and possess some knowledge of modern infant school methods. Children at this stage are usually taught by women ; for the later stages the teachers in boys' schools and in " mixed " schools should include an adequate number of men. Headships of " mixed " schools should be open to both men and women and there should, where possible, be a senior assistant of the opposite sex to the head teacher ; in large schools of this type the post of senior assistant should be treated as one of special responsibility. (See also recommendation No. 8.) (Chapter VIII, §87.)

Probationary period of service for Certificated Teachers.

45. We think that in both urban and county areas great care should be exercised in allocating young teachers to schools for their probationary year in order to supplement their college training. An effort should be made to utilise small rural schools for probationary experience, provided that such work is done under adequate supervision. (Chapter VIII, § 89.)

The Employment of Uncertificated Teachers as Head Teachers.

46. We think that it is essential that the head teachers in all primary schools, however small, should be certificated. (Chapter VIII, §§ 87 and 93.)

Training Colleges and Reorganisation.

47. Recent changes in school organisation, which have emphasised the distinction between primary schools and modern schools, have brought into prominence the desirability for reconsidering the problem of the training of teachers. We

suggest that appropriate steps should be taken to adjust the courses of training to suit the new organisation of schools. (Chapter VIII, § 88.)

Service in Primary Schools as preparation for teaching in Modern Schools.

48. It is desirable that primary school teachers should not be immobilised, and that service in primary schools should be regarded as a useful preparation for the teaching of older pupils, especially for those teachers who desire later to specialise in the subjects and methods required for modern schools. (Chapter VIII, § 87.)

The Special Needs of Certificated Teachers in Rural Primary Schools.

49. We are of opinion that all training courses should afford adequate practice in methods of individual and group work, which are indispensable in rural schools and are of great importance everywhere. We suggest that the authorities of training colleges should take full advantage of modern transport facilities, and include some small rural primary schools among their centres for teaching practice. (Chapter VIII, § 90.)

Training of Teachers for Classes and Groups of Retarded Children.

50. It should be recognised that in dealing with children between the ages of seven and eleven, due care for retarded children is in every way as important as for those that are normal. Since much of the knowledge of child psychology has been derived from the study of retarded children, it is probable that reference to the special problems they create will be made in most courses of training. An intensive knowledge of their needs, however, can be acquired only by supplementary courses imposed upon the foundation course of training. Teachers who deal with a considerable proportion of retarded children, therefore, should have special preparation, and any further training which they undertake to fit themselves for this work, should be regarded as an addition to their professional qualifications. (Chapter VIII, § 92.)

Facilities for assisting Certificated Teachers to improve their Teaching Proficiency.

51. In general we think that where a third year in a training college is not possible, short courses of the type of existing vacation courses and week-end courses should meet the needs of trained teachers in primary schools who desire to improve their proficiency in teaching. (Chapter VIII, § 91.)

Facilities for Uncertificated Teachers to improve their Teaching Proficiency.

52. So long as uncertificated teachers continue to be recognised, local education authorities which employ them should take appropriate steps to ensure that they are proficient. (Chapter VIII, § 94.)

53. We hold that in order to facilitate the entry of uncertificated teachers after not too long an interval into training colleges, and especially into colleges developing a rural side, the authorities of such colleges should accept candidates who are suitably qualified. (Chapter VIII, § 94.)

54. We think that authorities which do not already grant loans to assist uncertificated teachers to undertake a course in a training college, should consider the possibility of establishing a fund for this purpose. The amount of the loan, together with any grants payable under the Regulations for the Training of Teachers, should be such as would cover the expenses without undue strain on the teacher. (Chapter VIII, § 94.)

VIII.—Premises: Equipment: Playing Fields.

Premises and Equipment.

55. We think it most important that the premises and equipment of primary schools should receive, in proportion to their needs, as much consideration from authorities as schools of the secondary type; though we recognise that the efforts of authorities will under present conditions be largely directed to the improvement of existing buildings. (Chapter IX, § 96.)

56. School buildings should be placed so as to obtain as much quiet and sunlight as possible. They should contain one or two spacious rooms for practical activities with water and gas laid on, a separate room for medical inspection, facilities for school meals, and where possible, an assembly hall. The plans adopted for new primary schools might well be designed on open air lines. (Chapter IX, § 96.)

57. Steps should be taken, wherever possible, to provide a supply of hot water in the lavatories, an adequate supply of drinking water, and facilities for drying wet clothes and boots. (Chapter IX, § 96.)

58. Classrooms should be so furnished that they may be readily adapted for various forms of activity. (Chapter IX, § 97.)

School and Class Libraries.

59. The libraries of primary schools should be equipped on as adequate a scale as possible, and the range of subjects should be as comprehensive in small schools as in large. They should contain a number of story books on topics that specially appeal to young children. We repeat the suggestion which we made in our *Report on Books in Public Elementary Schools* (1928), that the head teacher should decide whether it is more satisfactory to keep the whole collection of books together, or to apportion some of them to different classes or groups. We assume that adequate accommodation will be provided for school and class libraries, and that the suggestions regarding their upkeep which we made in section 54 of the Report in question, will be borne in mind by the responsible authorities. The fact that the library for the older children of the primary school will consist of simple books intended for reading rather than for reference, will affect both the question of binding such publications, and of equipment for their accommodation and preservation. (Chapter IX, § 98.)

Playing Fields.

60. Some [1] organised games as well as free play are appropriate for children under the age of eleven. Grass playing fields should be provided where possible, and these should be situated near the school whenever local conditions permit. (Chapter IX, § 101.)

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[1] See footnote [3] on p. 122.

IX.—Examinations: School Records: Reports.

The Classification of Entrants from the Infant School.

61. In classifying pupils leaving the infant school, teachers may usefully apply intelligence tests. Full use should also be made of the school record, and of consultation between the teachers concerned. It is highly desirable that the classification of these young children should be regarded as merely provisional, and should be subject to frequent revision. (Chapter X, § 102.)

The Need for an Examination at the end of the Primary Stage.

62. As the provision of various types of secondary education is extended in the manner proposed in our *Report on the Education of the Adolescent*, the necessity for selecting by competition the children who will pass on to grammar schools and to selective modern schools, will be diminished. It seems certain however that some qualifying examination or test will always be required for the purpose of classifying pupils. (Chapter X, § 103.)

Examinations in one or in two stages.

63. We agree with the view expressed in the Board's *Memorandum on Free Place Examinations* that there is generally less risk of overlooking suitable candidates if the examination is held in one stage only. In cases, however, where the examination is held in two stages, the first, or internal stage should be general and compulsory. (Chapter X, § 105.)

Subjects of the Written Examination.

64. Carefully devised papers in English and arithmetic should be sufficient as a basic test of capacity and attainment for children at the age of eleven. We think, however, that the object of a final selective examination should be primarily to assess capacity, though the importance of a certain measure of attainment must not be ignored. (Chapter X, § 106.)

Use of Group Intelligence Tests.

65. Carefully devised group intelligence tests may be a useful factor in selection, but in our opinion it would be inadvisable to rely on such tests alone. (Chapter X, § 107.)

Oral Tests.

66. We think that in examinations which set out primarily to discover ability, weight should be attached to the results of a properly conducted oral test. (Chapter X, § 108.)

School Records.

67. Some form of continuous record of each child's progress should be kept in primary schools. We consider that further inquiry is desirable, in order to determine the most convenient form in which the necessary information may be concisely presented. (Chapter X, § 109.) (cf. recommendations Nos. 13 and 39.)

Collaboration between Schools and Parents.

68. In order to enlist the interest of parents in the progress of their children a terminal or annual report on each individual pupil, based largely on the school record, should be sent to them. It is especially important that the parents' interest in the progress of their children should be secured at the stage when they are presented for the general examination at the age of eleven. To this end authorities might issue (as some do) for circulation to parents short statements setting out in clear and simple language the facilities for secondary education that are available in the area concerned. (Chapter X, § 111.) (Cf. p. 103.)

Necessity for improving the technique of existing examinations and for viewing them in their proper perspective.

69. The conception of the primary school and its curriculum must not be falsified or distorted by any form of school test whether external or internal. The technique of examination must accordingly be so developed that it keeps abreast of the process of humanising and broadening the course of study in the primary school. One direction in which the right kind of examination will clearly develop, is in the increasing importance that it will attach to the school record, and the teacher's estimate, provided that this estimate is related to some general standard of ability and attainment. (Chapter X § 112.)

The Assessment of Schools by means of the Free Place Examination.

70. We cannot too strongly deprecate the tendency to base a comparative estimate of the efficiency of schools upon the class lists of a selective "free place" examination. (Chapter X, § 112.)

(*Signed*) W. H. HADOW (Chairman)
J. W. BISPHAM
W. A. BROCKINGTON
E. R. CONWAY
H. W. COUSINS
EVAN T. DAVIS
M. C. GALWAY
LYNDA GRIER
FREDA HAWTREY
EDWYN C. HOSKYNS
PERCY JACKSON
R. J. McALPINE
F. B. MALIM
ALBERT MANSBRIDGE
H. J. R. MURRAY
E. M. TANNER
R. H. TAWNEY
S. TAYLOR
W. C. WATKINS
J. A. WHITE

R. F. YOUNG (*Secretary*)

28th November, 1930.

SUGGESTIONS ON THE TEACHING OF THE VARIOUS BRANCHES OF THE CURRICULUM OF PRIMARY SCHOOLS.

In chapter VII we have enunciated the broad principles on which we believe the curriculum of the primary school should be based, and have indicated in outline the fields of activity and experience which we consider should form the main content of that curriculum. In the following pages we deal in greater detail with these different fields in the light of the evidence which has been laid before us, and offer suggestions on the choice of topics which may properly be included in them. We need scarcely point out that these suggestions are necessarily tentative, and do not in any way claim to be exhaustive. Moreover, the reorganisation of schools, now in process of being carried out, will undoubtedly lead to a reconsideration of the aims of the primary school and will throw fresh light on many of the points that we discuss below.

We desire to express our gratitude to the numerous organisations and individuals who sent us valuable memoranda and suggestions on the teaching of the various branches of the curriculum, which we have found of great use in preparing these notes.

The right choice of the topics to be treated, the grading of these topics properly for different ages of children, the linking of them duly with one another and with topics from other subjects, all are essential parts of the method of teaching any subject. But they only constitute one aspect of the teacher's task. He has to teach children, and to do this successfully he must know something of children in general, and he must know—and this is a perpetual obligation—as much as he can of the particular children he is teaching. The teacher teaches, but the child has to do the learning, and the teacher has to use his knowledge of the child to dispose him favourably to learning and to secure his willing and active co-operation. At times his task may seem to be made difficult by a pupil's innate deficiency, and occasionally, perhaps, by his innate perversity. But we know enough about the psychology of children to be sure that, as a general rule, active or passive resistance to instruction is evidence that either the wrong things are taught, or the right things are taught in the wrong way. In other words, we are entitled to expect that children

shall show in their lessons something of the zest that they put into their games, and to assume that where it is absent, there is good reason for inquiring whether the curriculum is properly chosen and whether appropriate methods of teaching are employed for these particular children.

The acquisition of skill and knowledge is only a means to an end, but the immediate aim of all teaching methods is to secure, as far as possible, that what a child learns shall be learnt in the most economical way and shall be sound, lasting and readily available for use. Thus conceived, method admits of many, indeed of innumerable, varieties. Different methods will be used not only in different subjects, but also in teaching the same subject in different circumstances of school organisation, numbers, situation, and equipment, and different teachers will face similar problems in different ways. In a vital sense, method is the teacher's style, the outward expression of his educational faith and experience. If his instruction is to be a living influence upon his pupils, his methods must in the end be an individual expression of his modes of thought, feeling and outlook, and not merely the application of general rules however sound. At the same time his methods must be elastic enough to meet the needs, often widely divergent, of all the children in his class.

There are three main ways by which a child, and indeed any human being, learns: through suggestion by a teacher, through demonstration or exposition whether by a teacher or by a book, by actual experimentation on his own part. By suggestion the teacher unfolds to the child fresh fields of activity and knowledge, and persuades him to give himself wholeheartedly to their mastery, not as a mere matter of meaningless routine, but because he understands already something of their purpose, their utility, and their practical value to himself. A child will apply himself to the mastery of reading all the more willingly when he realises that this mastery is the key that unlocks the secrets of the printed page and gives him the power to possess them at will; and arithmetic and geometry will no longer be for him an arid discipline when these subjects are justified in his eyes by the power that they give him in dealing with practical situations. By demonstration and exposition the teacher guides and assists the child in his acquisition of skill and knowledge. By experimentation the child acquires knowledge through personal experience and exercises his growing powers of hand and mind.

In the 19th century the conditions of popular education compelled teachers to concentrate upon the particular problem of how best to instruct large numbers of children when taken together in a definite range of work to be covered in a definite time. This resulted in an over-emphasis being placed on exposition and demonstration, or what became commonly known as "class-teaching." It would be unjust to minimise the fine work which teachers did in this direction, and not to recognise that the methods they worked out and the standards of technical efficiency they reached tended to the improvement of teaching in schools where far easier conditions obtained. With the growth of modern methods and modern material aids, class-teaching undoubtedly became an educational instrument with great and special virtues of its own. It will always have a place in the teacher's armoury, though not the predominant place it has held in the past. There are limits to its flexibility and therefore to its usefulness ; it cannot always be adjusted as closely as teaching should be, to the varying needs of children or to the natural movement of their minds. It is generally recognised to-day that children can play a far more active part in their education than is possible under a predominance of class-teaching, and that they differ greatly in their powers and rate of learning. It is widely held that children should be allowed, as far as possible, to proceed at their own pace. This view has led in recent years to a great increase in schools of work of the kind which we have described as experimentation by the child himself. This is more marked perhaps as yet in the case of children below the age of five and above the age of eleven.

We do not propose to examine or appraise the various methods of individual or group work which have been tried or advocated, and we limit ourselves to the following observations :—

(i) Since the immediate aim of teaching is that the pupil shall become an active learner, any method which is claimed, on reasonable grounds, to conduce to that end is worthy of unbiassed study.

(ii) The well-tried methods of corporate teaching have an indispensable place in the school economy, and should not be discarded wholesale in obedience to insufficiently tested theories.

(iii) Nevertheless there are occasions and purposes for which they are clearly not so suitable as methods which, while not

depriving the pupil of the stimulus, inspiration and guidance of the teacher, yet leave him reaonable scope to ensue his own special interests, to learn in his own way, and to acquire the priceless habit of independent purposeful work.

(iv) While these considerations are of general validity, they apply specially to small rural schools and other schools where, from the nature of the case, class-organisation and class-teaching must have a particularly limited value.

(v) Finally, while we deprecate experiments ill-considered or carried out under conditions clearly unfavourable to success, we hope that, as teachers come to grips with the special problems of the primary school, ways and means will be found of giving effect to what is sound in the suggestions of those who criticise the present predominance of the class-method. In particular we hope that, where individual methods are employed with unmistakable success in an infant school, the teachers in the lower classes of the primary school will consider carefully the propriety of so adjusting their own methods that there is no serious break in continuity as the child passes from the one to the other.(1)

It is to an extension and widening of teaching on the line of experimentation to which we referred in chapter VII when we urged that the curriculum of the primary school " is to be thought of in terms of activity and experience rather than of knowledge to be acquired and facts to be stored." This is perhaps the most fundamental of all principles of method, and contains implicitly most of the others. We desire to see the child an active agent in his early schooling, making his approach to the activities necessary for an understanding of the body of human civilisation and for an active participation in its processes, through his own experiences and his own activities, and relating his growing knowledge at all points to the world in which he lives. Our guiding principle applies to all fields of the school work and we hope that it will be taken in no narrow sense. The teacher must guide and direct, but the child's activities and experiments must be real. It is possible to teach handwork, drawing and even music in such a way that what the pupil does is mainly dictated from without, and so neither has the mark of genuine activity nor contributes anything of value to the child's experience. In these activities there must be direction from the teacher, and

(1) Cf. § 63, page 74.

there must be imitation, but the exercises should be so chosen and graded that a child at every stage can put something of himself into them. Here and there, there should indeed be scope for invention and artistic creation—achievements of which there is ample proof that children are capable.(1) For in invention and creation, even on a lowly level, experience reaches an intensity which gives it far more effect upon mental growth than a long cycle of patient assimilative effort.

RELIGIOUS EDUCATION.

During the past decade, many education authorities have issued syllabuses of religious instruction, framed by persons representative of various denominations and of the teaching profession, and graded to suit the successive stages of the child's mental growth and outlook. In these latterday syllabuses there is nothing perfunctory ; they are inspired by a profound conviction of the place which religious teaching should occupy as an integral part of the national system of education. "The teaching of religion is at the heart of all teaching" : "An education which leaves this instinct without acknowledgement must be defective, starving a child on a most important side of his nature" : "The aim has been to give instruction in the Christian faith as a living thing with power over daily life"—such pronouncements as these are typical of the spirit and purpose of the syllabuses issued by the West Riding of Yorkshire, Cambridgeshire, Leicestershire, Oxfordshire, Hampshire, Middlesex and other authorities, for use in council schools, and recommended for adoption as a common basis of religious education in other schools.

Two education authorities have widened somewhat the scope of the syllabus of religious instruction by producing, with the help of eminent Biblical scholars, a *Little Bible*(2). This contains a comprehensive selection of Scripture passages in prose and verse, arranged for teaching purposes, with an appendix for teachers and parents ; maps, time charts and notes on the text. Also, several publishers have sought to meet the need for shorter Bibles and Bible anthologies at prices which make possible their use in primary schools. These publications are the outcome of a suggestion made in our

(1) See §§ 42-45.
(2) *The Little Bible : Selections for School and Home* (Oxford University Press).

report on *Books in Public Elementary Schools* that there was "room for a good anthology of the finest passages of the Bible suitable for school use and produced at a reasonable cost."(1)

At the same time, it has been generally recognised that religious training cannot be confined within the limits of any syllabus, however comprehensive. In the Report of the Archbishops' Commission, attention was drawn to the fact that all these revised council school syllabuses "have helpful introductions pointing out the essential unity of the three main aspects of a child's religious training in school, (1) through worship in the school prayers, (2) through the school life and discipline, (3) through the acquisition of knowledge."(2)

Most of the revised syllabuses of religious instruction contain school prayers, or suggestions about school prayers, and about the choice of hymns. More precise in aim is a school service book already adopted by many education authorities.(3) It represents an attempt to develop quite definitely the principle of "teaching through worship."

In these and similar activities we find evidence of the re-organisation of religious education in council schools, and also of a notable advance in many areas towards an elementary basic syllabus which will serve all schools, and form a foundation for more specific religious teaching. We would urge upon all responsible for the education and training of teachers that adequate facilities should be offered for acquiring a sufficient knowledge of the Bible for this purpose.

ENGLISH.

The aim of English teaching between the ages of seven and eleven is the formation of correct habits of speaking and writing, rather than the abstract and analytic study of the language. In the primary school, the pupil should learn to read and understand modern English containing words in ordinary use, should gain fluency in expressing his own thoughts, and should obtain some power of private study and the ability

(1) Report of the Consultative Committee on *Books in Public Elementary Schools* (1928), page 30.

(2) Report of the Commission on Religious Education appointed by the Archbishops of Canterbury and York (1929), page 81.

(3) *Prayers and Hymns for use in Schools* (Oxford University Press).

to summarise his acquired knowledge. He should be able to spell all the words in the vocabulary that he uses; and, although oral expression will have a place of greater importance than exercises in written English, he should be able to arrange in order and set down in writing his ideas on a simple and familiar subject. His knowledge of literature should include some acquaintance with English lyrical poetry and good prose fiction suitable for his age. Practice in repeating good English verse and prose, as well as listening to it when read by the teacher, should assist him to obtain the correct pronunciation of words, and a distinct enunciation.

Between the ages of seven and eleven, the teaching of English is, in a special degree, involved in the teaching of all other subjects. Good habits of speech and writing will be formed within the sphere of the child's natural interests and in the course of his general studies. Failure to acquire these good habits will seriously affect his progress in all school subjects, scientific as well as literary.

Speech and Speech Training. Of the two habits, that of speaking correctly remains throughout the period the more important. It is customary in infant departments to devote special lessons to practice in oral composition: the children are encouraged to express themselves freely, not merely on school topics, but on everything that comes within the range of their experience. This practice should be continued in the upper stage of primary education. There is, however, in older children, a growing reserve; they are less ready to talk about their out-of-school affairs. The teacher will have to select topics of general interest which, while offering wider scope than more formal subjects, will not require the child to disclose what he would rather not. The ordinary school lessons afford the widest opportunity for practice in spoken English. Reproduction by means of a short oral narrative or class-discussion of the main points of a lesson and of the child's private reading is very profitable at this stage. It makes the child attentive, encourages him to select important detail, and, in a special sense, it makes the teacher of every subject a teacher of English also.

Similarly, the answers of the pupils to specific questions should be expressed with as much attention to literary form as can be expected at their age. There is, however, a difference between answers to questions and oral narration. It is sheer pedantry to require that children should answer every question

in a complete sentence : this will lead inevitably to the use of stilted and unidiomatic English. At the same time, the maintenance of a sound standard in the conversations between the teacher and his class cannot be overvalued. Where teachers expect substantial and relevant answers in good English, they will commonly get them. Where a good standard is not set, the resulting weakness in English will be reflected in the general weakness of other school subjects.

Speech training involves consideration of the use of dialect. There can be no doubt that an attempt to correct local peculiarities too early has a depressing effect upon the child's power of speech. With young children, the capital aim must be to secure that they begin to use language freely and easily ; a nearer approach to the standard speech may be dearly bought by an unnatural reticence on their part. The teacher must boldly face the fact that there are many varieties of the English language ; it is not the duty of the school to decry any special or local variations. As the children grow older, more should be done to teach the habits of standard speech. The best dialect words have a picturesque value, especially for literary purposes. In general, however, pupils should be trained so that they may be able to lay aside dialect, or to impose upon their own local speech that other which is known as standard English. In this, of course, the example of the teacher will be the most powerful influence. Children will readily imitate both the language and pronunciation of their teachers. The more correct and musical the teacher's pronunciation is, the more rich and appropriate his vocabulary, the greater will be the progress of his pupils. The most effective oral example is provided when a teacher talks to his class in such a way that, while he is fully understood by them, he is at the same time continually introducing and repeating in a fresh context a number of new words.

Above all, the degenerate speaking of standard English should not be confused with the speaking of dialect. It might even be advisable for a teacher who knows the local dialect to use it occasionally in his lesson, for the purpose of contrasting the dialectal forms with those of standard English. This will stimulate the pupil's interest in language : he will learn that the dialect may be spoken clearly and beautifully, and that slovenly speaking may be equally a defect of dialect as of standard English. The teacher, however, should avoid regarding idiomatic turns of language, which come with peculiar naturalness to a child, as incorrect English because

it is English that is difficult to explain logically. An easy turn of the native speech, even if it be colloquial, is preferable to any stilted phraseology.

Reading. An adequate supply of suitable books for use in class, for purposes of reference, and for reading at home, is essential.(1)

The process of learning to read should be nearly finished by the time the pupil reaches the age of seven. The mechanical difficulties will have been overcome by most of the children. If the pupil is found to be backward, the teacher should investigate the causes of weakness, and take special pains to become familiar with the system of learning to read that has been adopted in the infant department, so that backward pupils may not be confused by being introduced to a fresh method, except when the former method is proved to have been ineffective.

In the upper stage of primary education the child should gain a sense of the printed page and begin to read for pleasure and information. The main objects will be an increased command of the language, the acquisition of knowledge, and the appreciation and enjoyment of literature. These cannot be really acquired except through some measure of comprehension of the message which a book is intended to convey. In general, reading will be individual and silent, since its chief purpose is to familiarise the children with the habit of acquiring the meaning of the printed page. Silent reading must be tested by discussion of the subject matter, with elucidation and comment by the teacher upon such points as present difficulty. We agree with the recommendation in the *Report on the Teaching of English in England* (page 81) that from the first the lessons should be called "literature" rather than "reading." This type of reading may embrace many subjects of the school course. For the greater part of the period between the ages of seven and eleven it will, for example, be found unprofitable to separate historical studies from the general study of English, seeing that the pupil's reading in history will be mainly literary and non-technical in character. Until groups of stories give place to a continuous story, and the teacher turns back to trace the course of history from its beginning, and to show systematically the

(1) "If the foundations of reading as an art are to be properly laid, Junior Departments need to be adequately equipped with books for (i) oral reading, (ii) individual, group and class study, (iii) silent reading for information and enjoyment and (iv) reference."—*Report on Books in Public Elementary Schools* (1928), page 26.

development of the nation, the study of history is not to be distinguished from the study of literature. Similarly, although perhaps to a less extent, geography does not become a specific school subject during the earlier part of this stage.

Every class should have a small library from which books may be borrowed for home reading.(1) The books may be mainly story books, but they should be widely chosen. Care should be taken not to press upon the children books of a kind not likely to be attractive. If the children are interested in reading books they will gain much in the way of vocabulary and idiom, even though the books themselves may not offer much in the way of content. This type of reading should be mainly done out of school or in spare time. Only in schools in very poor neighbourhoods should it be necessary to give school time to it. The teacher, however, should regard the private reading of his pupils as within his province, make it his business to know what the children read, influence and guide them unobtrusively, and relate his own teaching to the pupil's private reading as opportunity offers.

We discriminate between reading and oral reading or " reading aloud." In the period between the ages of seven and eleven, reading aloud will be practised regularly as a training in a useful art, as an exercise in clear speech, and in order to afford the pupils an opportunity of learning the pronunciation of words that are not to be found in their home vocabulary. Reading aloud is a technical exercise, and school readers used for this purpose should be, so far as possible, graded in difficulty.(2) They should, however, have as much literary value as is compatible with the vocabulary which they introduce at each stage. A piece of standard literature should not be rewritten to produce a school reader. The literary value of the book should have first consideration.(3) Preliminary study of each passage is essential ; " unprepared " reading aloud is the source of most failures in reading.

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(1) Section 54 on pages 63–64 of the Consultative Committee's *Report on Books in Public Elementary Schools* (1928).

See also chapter on Premises and Equipment, page 119.

(2) The scientific grading of readers with the object of concentrating attention in the early stages upon the words which are most commonly used has been insufficiently regarded in this country.

(3) " Some modern books for oral reading take the form of prose miscellanies of a higher standard of difficulty, which can be read and re-read by the pupils and the teacher. They will also contain passages suitable for learning by heart and for class study." *Report on Books in Public Elementary Schools*, Section on Books in Junior Schools, page 26.

Spelling and Dictation. We have already implied that accuracy in spelling is primarily to be acquired through reading, although the value of committing to memory the few rules that govern the spelling of a large proportion of English words will not be overlooked. It is essential that pupils who do not naturally observe the form of the words while reading them should be specially trained in concentration. Moreover, mistakes in spelling can best be corrected by making the pupil transcribe many times the word that is wrongly spelt. Weakness in spelling is due to many causes, but the majority of pupils that are good at spelling appear to see the word in the mind's eye, and the practice of writing the word assists this mental sight. Those pupils whose ability to remember through visual images is abnormally low sometimes have a compensating advantage in a special aptitude for recalling muscular or aural impressions. A skilful teacher will contrive to provide appropriate means of appeal to this minority of pupils, whose inability to learn through visual images is an especially serious handicap to them in learning to spell. The pupil should learn to spell the words that are within the range of the vocabulary he uses, or of the literature that he is reading, and should not learn lists of unrelated words. Any attempt to teach spelling otherwise than in connection with the actual practice of writing or reading is beset with obvious dangers. The formal teaching of spelling becomes, therefore, mainly the elimination of errors in written composition. The most common errors that have occurred in the class essays may be pointed out to the whole class, just as in class teaching words that are new to the vocabulary of the children will be written down so that they may learn the form as well as the sound of them. When formal teaching is necessary in connection with the pupils' errors, words that are connected in meaning should be associated together rather than those that are connected in form. For example, with young children a little ingenuity will often reveal reasons for spelling which will help to differentiate words that are similar in form: thus, their is related to they, there to here, has to have.

The persistence of dictation exercises is no doubt to be explained by the fact that under the older "Codes" pupils were examined in spelling by dictation tests. While dictation may incidentally be a means of testing spelling, it cannot in itself be a means of teaching spelling. The chief use of a dictation lesson is to afford the pupils a training in careful

listening and comprehension and in careful writing at a reasonable speed. Passages for dictation should usually be selected not on account of the difficult words that they contain, but because of the interest or merit which they have in themselves, and because they may be wanted for use afterwards in class.

Written Composition. Written composition is often started too early in the primary school. Oral practice should not be sacrificed to the written essay. In early years, the periods given to written work should be short, the topics should be immediately interesting to the children and fall within their experience.

The success of the composition writing of the younger children depends fundamentally upon the choice of the subject. The pupil must have something to say. If the topic arises out of the scheme of teaching, as, for example, project topics, it will have received some literary foundation, and the performance of the pupil must be appraised accordingly. Topics will not be confined wholly to school work; but outside topics must be such as are familiar to the pupil. For example, upon incidents of home life, young children will write fully and naturally, and will desire to write. In the course of the upper stage of primary education, care should be taken to include narrative, description, some exposition, and if possible some argumentation; but abstract and general topics should be avoided. Written composition frequently takes the form of reproducing the sense and substance of a passage read to the pupils. This useful practice may be regarded as a stage between transcription or dictation and the writing of original essays.

In the marking of composition written by pupils between the ages of seven and eleven, the content requires more consideration than is sometimes given to it. If a child's composition is interesting, it is good, because the interesting matter it contains is an indication of the activity of the child's mind. High value should be given to an essay which shows that a child has intelligently and acutely looked at his subject. On the other hand, aridity of observation must be regarded as a corresponding fault, detracting from the higher literary finish that the essay may have received. The mere avoidance of mistakes in language is not merit. Some mistakes, indeed, deserve merit, as when a child tries to use a word or construction to express a more subtle idea and does not get it quite right.

Literature. There are at the disposal of the primary school teacher traditional stories told in good English which will not only be enjoyed by the children at the time, but remembered by them in later years. It is not desirable to emphasise prematurely the purely literary point of view. The main object is to get the children to read fluently and with pleasure. Around the nucleus of simple rhymes should be gathered other suitable poems, especially those which deal vividly with action and narrative. The traditional ballads on which so many generations of distinguished Englishmen were reared, should have an important place in the primary school.

Among the books that are the property of the children, or at least should be in their keeping, anthologies should certainly be included. Pupils may also make anthologies for themselves. For the practice of handwriting, and to prevent the reasonable latitude allowed in written work from degenerating into mere slovenliness, a certain amount of transcription is necessary. This may cease to be a mere writing exercise and may be made more useful and interesting for the pupils if they transcribe their favourite verse and prose passages. Children will be more likely to write neatly and attractively when they know that their work is not a mere exercise but is the making of a little book which they will take away with them as a permanent possession. The production of such small anthologies will give occasion for both script and cursive handwriting,(1) and will afford opportunity for a clear and artistic arrangement of material. Transcription will thus serve more than one purpose. It will not only be an exercise in handwriting but also a literary exercise, and incidentally it will afford a proper exercise in spelling, since it will not be dealing with strings of unrelated words chosen at haphazard, but with pieces of continuous language in which the words occur in their natural context. Moreover, books that contain worthy literature will repay care that is devoted to the lettering and binding of them. This suggests that in the making of such books there may be even a further exercise which is closely associated with the development of the children's aesthetic sense.

Just as the teaching of spelling should be as little pedantic as possible, so also should the teaching of "meanings" in passages of literature. The difficulties of language must not be exaggerated. The hard words can be explained in such a way as not only to avoid wearying the pupil, but to increase his interest

(1) See Section on Handwriting, page 193.

and enjoyment.(1) In the study of poetry, the important thing is that the poem as a whole, whether read by the children or to the children, should have a meaning for them. This point is sometimes overlooked, and poems of most difficult content are chosen merely because their language appears delusively easy. Whether the poem is ancient or modern, it should be excellent of its kind. Its appeal to the mind of a child should have been tested.(2) It should not be chosen merely because it touches a sentimental chord in the heart of a grown-up person. Through suitable modern poetry, selected for its narrative interest or for its beauty of music and rhythm, the pupil should be led back to the classical examples of English verse; and the teacher should not neglect those great pieces of English literature which have stood the test of time.

The value of dramatic work has long been recognised. It makes school studies enjoyable, and the writing and production of class plays is an aid to creative work. Dramatisation of poetry and other forms of literature should have a prominent place in the primary school. Even among the younger children, simple play production with criticism by the class of the interpretation given by different groups of players, will develop the beginning of critical and interpretative power, and will provide a more complete and intensive experience than reading only. Suitably easy plays or scenes may be selected, and natural play acting will be connected with literature, music, dancing, and handicraft.(3)

Grammar. Till the end of the eighteenth century, English "Grammars" were made almost entirely by the artificial transference of Latin rules to English. The Latin rules did not fit; because not only is English a very different language, but a living language subject to constant change, a language with few inflections, little concord, and one whose words may vary in function without change of form. The survival of this grammatical teaching in schools where Latin was not taught, and where the pupils were too young to appreciate abstract rules, caused the decay of the teaching of grammar as a specialised subject in elementary education. Owing to this

(1) The over emphasis of separate images in a passage of poetry is similar to the over-elaborate elucidation of "meanings" in its harmful effect upon literary appreciation.

(2) By "tested" we mean deliberately "tried out," just as a psychologist tries out his tests to ascertain their suitability before standardising them.

(3) See pages 188 and 194.

reaction, the teaching of English has become weakest on its formal side. It is true that, speaking generally, pupils learn to write and speak correct English by imitation and practice, but an irreducible minimum of pure grammar should be taught as a part of the English course. The pupils must be made conscious of the functions of words and of the correct structure of the sentence, and must learn the grammatical terms arising therefrom. Where change of function is attended by change of form, e.g., the possessive case in nouns, the objective and possessive case in pronouns, singular and plural number. comparison in adjectives and adverbs, person and tense in verbs, the pupil will learn the use of grammatical terminology. Having learnt this, he will recognise that in an uninflected language similar word-relations exist, and these grammatical relations will be none the less real to him when they are not indicated by change of form. Thus he will become acquainted with grammatical principles that are statements of linguistic habit, the knowledge of which will assist him later in learning a foreign language.

The difference between the formal teaching of grammar and the more informal teaching that is here indicated lies mainly in the method of approach to the subject. It is doubtful whether the abstract study of formal grammar, suitable though it may be to a language in which changes of form correspond to changes of function, is desirable even for the later study of a foreign language. While the learning of English grammar will enable the pupil to appreciate the construction of a foreign language, any elaborate attempt to prepare him for this by the study of the grammar of his own language may lead to the emphasising of unimportant features of English, to the omission of important features, and to the description of features which do not exist. Without an excess of analytic and abstract teaching, and without formal definitions, the pupil may obtain a good working acquaintance with the important features of his own language, if grammar is taught for its practical utility and not merely as a logical exercise. The teaching, as we indicated in a previous Report(1) " will be more concerned with the examination and study of current English."

" The art of speaking and writing the English language with propriety," which was Lindley Murray's definition of English grammar, should, up to the age of eleven, be acquired largely

(1) *Books in Public Elementary Schools* (1928), page 33.

by actual contact with the language and by acquaintance with such grammatical terms only as are necessary to explain the difference between accuracy and inaccuracy in its use. Mistakes in writing and speaking are the result of unfamiliarity with good English. They are merely symptoms, and teaching should not be directed to removing symptoms but to removing the underlying causes of them. These causes cannot be removed by correction of common errors which the children themselves have not made, nor by learning facts about language, isolated idioms, figures of speech, synonyms, homonyms, and so forth, but by using the language in reading and writing. At the same time, in order to use the language properly, the pupil must make some study of the way in which language does its work. He must perceive function and structure, and must therefore become acquainted with grammatical terms. There is a glossary of language as of most other subjects, for example architecture and music. The grammar that is taught should constantly be used in intensive study of passages treated as models of writing. The force of grammatical terms will thus be felt by the pupil; he will not be required to "define" them.

THE PROBLEM OF THE TWO LANGUAGES IN PRIMARY SCHOOLS IN WALES.

The evidence from the Principality in respect of conditions common to schools in England and Wales differed very little from that submitted by witnesses from England. There is, however, as the evidence showed, one outstanding problem in Wales which clearly demands special treatment more particularly at the primary stage. It is the problem of the two languages, Welsh and English, in the schools.

We have already drawn attention(1) to the profound change in the purpose of the school as it is now understood and in the conception of its curriculum at the primary stage. This new attitude is perhaps of even greater importance in its bearing upon the problems of the primary school in Wales than on those of the primary school in England. To think of the curriculum of the primary school in terms of activity and experience rather than of knowledge and of facts to be stored will of itself in our opinion go far towards mitigating the language difficulties in the Welsh schools.

(1) See Chapter VII.

Since the main effort is to be directed towards developing the gift of expression, which means, in the main, the teaching of language, a second language can be cultivated under much more congenial conditions. The general atmosphere is more humanistic. The second language can, whether English or Welsh, be taught as a living language, so that gradually it may become to some extent a medium of expression and instruction. Nor will it now become a question of trying to find room for a second language on a time-table already overloaded by the demands of so many other subjects. The demands of subjects are to be regulated by their usefulness as occasions for producing experiences appropriate to children between seven and eleven. The development of so-called subjects at this stage will not be an end in itself and it is certain that this restricted, but more effective, use of them will leave more time during school hours in which to teach the second language.

During the last few years there has been a great deal of systematic investigation into the language question in the schools of Wales. For instance, in 1927, a Departmental Committee published a report on " the position occupied by Welsh (language and literature) in the educational system of Wales ",(1) and in 1929 the Welsh Department of the Board of Education issued a memorandum designed to afford guidance to authorities and teachers in accordance with that Report.(2) This memorandum deals with the two-language problem and language-teaching, and also contains certain considerations on the curriculum for the primary stage which are designed to secure for children between the ages of seven and eleven a training that will meet more completely their particular mental and physical needs at this stage. Although this line of thought had been pursued apart from any special consideration of the two-language problem, it became clear that the general conclusions involved would affect the position and development of Welsh in the primary schools, whether as a first or a second language.

Since language and experience are indissolubly associated, the primary school in Wales, as in England, must furnish children with experiences through which they can express themselves fully and accurately. For Welsh-speaking children, the Welsh language is the natural medium of instruction during the early years of school life. In later years its use might

(1) *Welsh in Education and Life* (1927).
(2) *Suggestions for the consideration of Education Authorities and Teachers.* (*Memorandum No.* 1.)

properly be continued, at least to such an extent as will not imperil the ultimate proficiency of the children in English. The divorce in Welsh speaking areas between the language used at school and the language actually employed by the child inevitably delays development, and indeed may be regarded as one cause of retardation.

The general suggestions regarding language training given in the memorandum mentioned above are as follows :—

(*a*) That there be no attempt to give formal instruction in a second language, whether English or Welsh, in any infant school. Simple rhymes, folk-songs and games, however, can be taken in that language, mainly as mimetic exercises, so as to take advantage of the plastic state of the child's vocal organs at this early age, and accustom it to utter sounds in the second language, which it would master with greater difficulty at a later stage. It is considered that the chief function of the infant school is to reinforce the child in the home language, whether English or Welsh.

(*b*) That in predominantly Welsh or English areas the formal teaching of the second language, whether English or Welsh, shall begin at about the age of seven. It is to be expected, naturally, that the ultimate attainments in English of the Welsh-speaking child will be higher than those of the English-speaking child in Welsh, since the needs of the former in English will, usually, be greater in later life than those of the latter in Welsh.

(*c*) In linguistically mixed areas, the position varies almost from school to school as the ratio of Welsh and English-speaking children varies in each school. In large schools, where parallel classes can be formed, it is possible to adapt the language teaching according to the mother-tongue of the separate classes. In smaller schools, the solution is more difficult and a compromise that has regard for the interests of the majority is inevitable.

In the light of the evidence which we have received from Welsh teachers and administrators, we agree generally with these suggestions.

HISTORY.

The problem of teaching history to children under the age of eleven is one in which much experiment is still necessary particularly with regard to the scope and content of the subject

and the most satisfactory approach for different types of younger pupils. This is the more necessary in a subject like history where the material is so largely literary, because young children have a remarkable facility for committing to memory generalisations which, to them, have little or no foundation in actual experience and although they often display considerable eagerness and pleasure in this apparent conquest of knowledge, a prolonged course of it soon brings the inevitable reaction. The acquisition of these "inert ideas" is of little value and may be harmful: for ideas which cannot be related to the child's life and experience soon cease to have any attraction whatsoever, and the work tends to become valueless drudgery which kills all desire for, and interest in, the subject. Moreover it is surely a waste of valuable time and effort to attempt to cover work more appropriate to a later stage when there is so much historical material which is eminently suitable for these young children and which, while perhaps not being the history of the text book, is valuable as a foundation for securing a greater degree of understanding at the secondary stage.

For the purposes of the primary school there are rich and varied literary sources from which to draw a supply of suitable subject matter. Bible stories, classical narratives, mediaeval romances, stories of exploration, travel and invention furnish obvious instances. The mere recital of these sources is sufficient to indicate the desirability and even the necessity for not establishing any very distinct demarcation in the time-table between literature, history and geography, since in most of the sources mentioned above the elements of all three enter. Moreover the child has not yet reached the age when the line of argument proper to history, namely, tracing the development of a community and its civilisation through a period of time, makes a natural appeal. But the wide range of material and the lack of defined boundaries in the subject renders history lessons in the primary school liable to several dangers. In the first place the topics selected may be of such a miscellaneous character as to make history in the child's mind a mere jumble box. In the second place they may be chosen because of their outstanding importance in history without regard to the suitability for young people of the subject matter which is likely to be connected with them. On the other hand in the teacher's endeavour to make such topics interesting there is the danger that the work may degenerate into mere anecdotes of no value historically, and of little value in any other direction. In general these dangers are principally matters of

selection and they emphasise the fact that selection both of topics and of the subject matter connected with them is of primary importance.

Our witnesses agreed that the subjects chosen for inclusion in any syllabus of history work for the primary school should not be confined to British history. The tendency in the primary school is to approach history through topics which may serve as an introduction to, and illustration of, the different stages of civilisation, though more coherence is desirable than is shown by the various topics that figure in some schemes. Furthermore an increasing number of well illustrated books written from this point of view is being published. Another principle which will receive general acceptance is that the subject matter connected with each topic should also be such as makes a natural appeal to the youthful mind, either on account of its romantic character or because of its close connection with the child's outlook on life and with his experience. A third principle, the adoption of which was urged by many witnesses, is that only topics which have some important bearing on the present, or which are actually in the present, should be selected. But while there is no question that the observance of the idea underlying this principle does vitalise the history work of later stages, care needs to be exercised in the primary school lest the romance of history disappear altogether. For although such stories as Hereward the Wake and Ivanhoe might appear to have no important bearing on the present, the child who has not become acquainted with them has certainly sustained real loss, not only spiritually and mentally, but on the side of historical comprehension also. We are unanimous in believing that history has already gained much in interest and reality for pupils over the age of eleven by the past being brought more definitely into relation with the present and on this ground we would urge that more consideration might be given to the possibility of approaching the past in this way in the primary school. On the other hand we would refer to the almost universal interest that has been displayed, even by young children, in the recent Egyptian and Babylonian discoveries as an illustration of the romantic appeal which the past makes and will continue to make irrespective of its significance to the present. For the final stage there appears to be a consensus of opinion that the work should consist mainly, if not wholly, of topics selected from British history. By this means, while the work would still be largely topical in character and still

mainly for the purpose of forming a background it would begin to assume the character of a connected narrative in which the process of change is to some extent being traced.

In the presentation of history to young children pictures are essential, especially in the early stages. The selection of pictures demands as much thought and care as the selection of subject matter. For the younger children they should be few, bold, representative, and as historically accurate as is possible. Pictures of single figures like a knight or a bishop or a monk and other simple contemporary illustrations are very valuable. A miscellaneous assortment of pictures may well be even more disastrous to the growth of ordered historical conceptions than a miscellaneous collection of topics. In addition to pictures, historical monuments and historical objects in museums may play a part: but at this stage their use is to arouse interest and wonder, and incidentally to enable the child to understand references to such things when he meets them in his later studies. After the first stages of the course are completed, some teachers would introduce the time chart. At the beginning this also would be pictorial in character becoming in the last year more nearly of the form required in the secondary stage. Children at this age are greatly interested in drawing and much that is important in history can be taught to them by means of their own drawings. Again handwork is favoured by a number of teachers because it is valuable in making certain features of the past more intelligible to the child's mind. On this question, however, others feel that the ability of pupils under the age of eleven in using tools and materials is insufficiently developed for this work to be done accurately, easily and quickly. But all are agreed that, where it is done, it should be carried out under the direction of the history teacher in times set apart for handwork. We are in accord with this view, especially with that part of it which holds that the making of the models should be assigned to the handwork periods. We feel that whereas there is insufficient distinction between literature, history and geography on the story side to make them entirely separate subjects in the time table, there is a real distinction at the primary stage between handwork, experimental work and observation work on the one hand, and literary work on the other. It is perhaps unnecessary to add that models should in no way run counter to the historical conceptions which they are intended to convey.

If at the end of his course in the primary school the child can read a simple history book with some real understanding

and its main outlines are not unfamiliar to him, and if in addition, he is beginning to have a lively sense of the bearing of history upon his everyday life and environment, the course will have accomplished its purpose and its work will have been well done. This we believe will form a better foundation for the secondary stage of education than can be provided by any attempt to acquire at the primary stage a knowledge of historical facts which properly belongs to the later stage. The later stage of the pupil's work in history, the building up of a simple consecutive view of the development of his own community in particular and of civilisation in general, would then offer a field of intelligent thought and interest which should not fail to attract and this in turn should lead to the conception that our civilisation is the fruit of the activities of many peoples, and is rapidly becoming the common possession of mankind.

GEOGRAPHY.

Work in the primary school in geography, as in other subjects, must "be thought of in terms of activity and experience rather than of knowledge to be acquired and facts to be stored," though due regard will be paid to the stimulation of the imagination by means of vivid description: it ought not to be regarded merely as a preparation for stages yet to come. The work must be such that it is suited to the development and interests of the children. Children should not begin geography by learning definitions nor by memorising capes and bays. Certain geographical facts must be learned, but the mere learning of those which are not connected with known realities has little value. In our general chapter on curriculum we have suggested that more use might be made of what is known as the project method. Geographical teaching can be readily adapted for treatment on these lines.

Much of the teaching in the past has lacked reality. Either the facts were taught badly—for example they were expressed in words which had no touch with reality—or an attempt was made to teach facts which could not be understood. Sometimes these two mistakes were made simultaneously. It is not necessary that a teacher should have the vast store of geographical knowledge possessed by a specialist, but it is necessary that he should not attempt to teach things which the children cannot understand.

It follows that it would appear advisable to delay the beginning of formal geography to a later stage than has been common in the past. It is true that much geography is implied in the general teaching which takes place in infant schools before this is differentiated into subjects at a later stage. Children love folk tales and stories of the peoples of other lands. It is obvious also that a child is learning geography all the time out of school. Every time that he goes to school and comes home, he is learning place and movement. This activity and experience is indeed the germ from which the understanding of geography should develop. Whether in town or country, local geography is fundamental. Continual reference to things which the children know is one of the few ways by which geography may be kept real throughout the school course, and intelligent curiosity in things they can see for themselves may be stimulated without the expenditure of very much school time. Experience in local geography, too, supplies the initial means by which the rest of the world may be understood. Such terms as "hot" and "cold," "high" and "low," "wet" and "dry," when introduced, are interpreted by the children in terms of what they themselves have seen and felt. But all this takes time and cannot be hurried. It is only about the age of eight that geography which involves simple reasoning may usefully be begun. With slow children the work may be delayed for six months or even a year.

This early teaching has two aspects (*a*) the beginning of map work and the geography of the home region, and (*b*) the introduction of a conception of the world as a whole and its representation by means of a globe, from which it is an easy step to a simple map of the world. In view of the fact that modern methods of teaching geography have become more widespread it is unnecessary to describe in detail the method followed to make map studies real, but a brief outline may be helpful. First and foremost it is essential that the maps should be used and not merely talked about. It follows then that only such maps as the children can understand should be put before them. The first map should be a plan, even if it is of nothing more complicated than the teacher's table. The need for indicating fixed position soon introduces a knowledge of the cardinal points. This use of the plan on which position may be indicated is then extended to the school and its playground, and to the main roads or streets in the immediate neighbourhood of the school. By the age of eight the child should know

a good deal about the neighbourhood of his home and school, and be capable of recognising known features on a plan. By this time he will have reached the stage when simple scale drawing will probably have been begun, and he will need in the next stage to see his local map in terms which he can already comprehend, and to recognise all these features when represented by conventional signs. He will now have not only direction and distance to consider with but configuration also. Here the rural child should have an advantage because he can observe many of the actual objects before seeing their conventional representation. If this is impossible for the town child, pictures of simple but actual scenes should be shown alongside their representation on the map(1). An average child of the age of nine or ten soon begins to see in the representation, say of a part of the Cotswolds, the slope of the hills indicated by the varying shades of brown, and the spread of the plain shown by the stretches of green. The principle is then extended to a small portion of a mountainous region where pictures and map are again shown side by side. The conventional use of colour and the elements of scale of maps must be understood, but children will not experience any difficulty if use be first made of maps of districts familiar to them. In this way the child approaches the map of England on which the different features appear in relation to one another. At the same time it will be realised that when once a child has acquired an approximate idea of the physical representation of one country, he is in a position to begin using maps in which other countries are shown in relation to his own. Care must be taken to ensure that children obtain a true idea of the comparative area of other countries by the use of maps which are drawn on the same scale as the map of England.

In the infant school changes in the weather will doubtless have been noticed. Between the ages of seven and eleven much attention should be devoted to outdoor work, e.g. direct observation of the apparent motion of the sun, and its increasing height in the heavens at midday as summer approaches ; cold and warm winds ; the function of the weathervane ; wet and dry weather ; etc. All these combined with the early stages of map work described above will bring home to the child the necessity for the use of the cardinal points.

We turn now to the other side of the geographical work. The earliest conception will be formed through folk tales and

(1) Photographs taken from the air may be used with great advantage at this stage.

stories of other lands. For the purpose of showing young children where these lands lie, neither a map of the world nor a globe should at first be used. Their actual position should be indicated by pointing in the direction in which they lie, or by connecting them with some natural phenomenon like the morning and evening sun. These directions might be pointed out on the simple plan of the school or the map of the district with which the child is familiar. This will cease to be necessary as soon as it is possible to use the names of the cardinal points. At first, the teacher will use pictures to give the child some idea of the appearance of a land and its people. This use of pictures will take the place of the use of the globe and the map. Selection not only of pictures but also of stories is a vital factor, and if this selection be made satisfactorily, the child should have acquired by the age of nine some conceptions of the more strongly contrasted regions of the world. Moreover with the ability to use simple maps, which he will have acquired at the same time, comes now the possibility at this age of introducing the globe; and when it has once been introduced, it should be continually in evidence.

After this the work may become somewhat more systematic and progressive than has been possible earlier, and the children may obtain some kind of conception of the world as a whole, but, while no attempt should be made to cover the whole world in outline the majority of the pupils by the age of eleven will have acquired a knowledge of the position of the continents, oceans, more important countries, chief mountain ranges, and a few of the most important towns. Many methods of giving this conception are possible. It may be suggested, however, that a selection of topics which are interesting to children may be made in such a way that while each is more or less complete in itself they may together build up a conception of the world as a whole. If a satisfactory selection of topics is made the child begins to realise through these that there is a certain completeness in the world.

Some witnesses suggested that work of this character and scope is all that can be expected in primary schools. If the systematic work is not begun until the age of nine this is probably true. Even so the study of the home region should be extended to include some other simple study of the principal geographical regions of the British Isles, and it should not be difficult by the end of the primary stage to show the pupils how these regions are interrelated.

ARITHMETIC AND SIMPLE GEOMETRY.

There is a general agreement among our witnesses that too much time is given to arithmetic in primary schools, and a general regret that too little attention is given to the study of simple geometrical form. At the present time it is usual for about one-fifth of the total time-table to be allotted to arithmetic, while the subject matter is confined almost exclusively to purely arithmetical topics, and rarely includes any geometry apart from a little mensuration. This liberality in the matter of time is undoubtedly due to the traditional position given to arithmetic in the public elementary school, but it is often maintained by the importance attached to the subject in free-place and scholarship examinations. Nevertheless it is widely believed that the time allocated to arithmetic can be greatly reduced without loss, provided agreement can be reached as to the proper scope of the work in these schools. We concur in this belief.

We believe that arithmetic in the primary school should mainly be concerned with the fundamental processes or "rules." The chief problem for the teacher is how to secure a thorough mastery of these basic operations without devoting too much time to them, and without creating a distaste for the subject. In these basic operations we include a working knowledge of the systems of notation for integral and fractional—vulgar and decimal fractions—numbers and their written forms, a sound knowledge of the weights and measures in ordinary use, and the four processes in addition, subtraction, multiplication and division as applied to numbers, whole and fractional, and to weights and measures. We do not include the application of these "rules" to difficult commercial transactions, nor do we contemplate complex examples and involved problems. We believe that examples should be brief and numerous rather than long and complex. They should at all times, but especially in the earlier years, include a very considerable amount of oral questioning by the teacher, the answers being written down by the children, and they should constantly test back work. Thoroughness in a certain nucleus of knowledge and skill and keenness in its pursuit as a whole form the best equipment with which the pupil can leave the primary school.

It has often been urged that the beginnings of arithmetic should be "concrete." If by this is meant that the child's early work should be founded on his personal experiences and deal as far as possible with things familiar to him, it is a truism,

and applies to all teaching at this stage. But if it means that the child must only deal with numbers of articles and never with number in the abstract, must add horses to horses and take nuts from nuts, and never add three to four or take seven from twelve, it is pure pedantry. It is common experience that abstract numbers present no difficulties to children while to label quantities in a sum adds nothing to their sense of reality. The truth is that the fundamental operations of addition, subtraction, multiplication and division belong to the abstract side of mathematics and are most simply and effectively dealt with in the abstract.

It is essential that these fundamental processes of arithmetic shall become automatic before the child leaves the primary school. Unless he can add, substract, multiply and divide accurately, quickly, and without hesitation, his future progress will be severely handicapped. This means that he must know his addition and multiplication tables through and through as certainly as he knows his own name, and must know them in such a way that each separate formula constitutes a self-contained system and is completely usable without reference to any preceding formula. The child who cannot give the value of six eights without thinking of six sevens or the "six times" table has burdened himself with a superfluous bit of mental mechanisation.

Any discussion as to the way in which the fundamental processes should be taught may be left to the numerous text-books on method, with the one caution that it does not follow that the method which it is easiest to demonstrate is necessarily the method which will lead most easily and surely to the desired result. A child should know how the multiplication table is built up and be able to build such a table as the "sixteen times" table when he requires it, but this knowledge is no substitute for the rote-knowledge of the ordinary tables. Nor is it reasonable to expect a child in the primary school to justify the process he employs, say in subtraction or division; this is too hard an exercise of his reasoning powers and should be left to the secondary school. The aim in the primary school is to secure ability and readiness in using the processes, and this can only be attained by much practice of them, both oral and written. There is no necessity to use large numbers, though a child who wishes to test his powers of concentration by experimenting with large numbers need not be discouraged on the ground that he cannot form a concrete idea of such

numbers; very few adults have more than a vague idea of a number of any size. But it is important that the methods taught should be of universal application.

In all written work attention should be paid to its arrangement. Schools in this country have in the past rarely attached sufficient importance to the form in which arithmetical computations are recorded, and the written work is often nothing more than a succession of rough notes of computations which form part of the mental argument and which are put down on paper, either because they are too elaborate to be performed mentally, or because the results of the various interim operations might otherwise be forgotten. Clear thinking is essential in arithmetic, and the habit of clear thinking is assisted greatly by the use of a logical form of arrangement of written work. A form for arithmetical work which follows the mental steps of a clear thinker, and has regard to its usefulness at a later stage, should be prescribed. Thus, the future needs of the subject will lead to the adoption of the algebraical arrangement in multiplication:

$$\begin{array}{r} 3042 \\ 241 \\ \hline 608400 \\ 121680 \\ 3042 \\ \hline 733122 \end{array}$$

where the first line of the working gives a first approximation to the result, and each subsequent line adds a finer approximation.

In written work again, children should be taught from the first to check their results, (*a*) by making a preliminary rough estimate of the result to be expected, and (*b*) by a subsequent checking of the written record. This subsequent checking should always take a different line from that followed in the original calculation. Thus, subtractions should be tested by additions, multiplications by divisions, divisions by multiplications, etc. If in long additions children are taught to add downwards—so that the addition ends where the resulting total is to be entered—then additions can be checked by adding upwards. Later, when children have learnt the simpler tests for divisibility, less laborious methods of checking can be introduced.

The interest of children in this work with pure numbers can be greatly increased by talks on the simpler properties of numbers and the history of their discovery. The difference between odd and even numbers, the factors of a number, prime numbers, square numbers and square roots, even the triangular numbers of the Greeks, all appeal to children and may lead to what an eminent mathematician has called "a personal friendship with numbers". The tests for divisibility by 2, 3, 4, 5, 6, 8 and 9 and their uses can be illustrated, and children enjoy discovering the principle on which a simple series of numbers has been constructed.

From the first increasing attention should be paid to the applications of arithmetic to matters within the children's environment. Here the teaching will be concerned, on the one side with money, on the other with elementary notions of shape, size, and weight. In dealing with money, the children's home experiences will provide a sound foundation which has only to be extended and developed. In dealing with shape, size and weight, however, home experiences have to be clarified and arranged before they can be used. This can only be done satisfactorily through practical work—so far as shape and size are concerned, by the actual handling of the simpler geometrical figures, their construction, their measurement in all kinds of ways, and by making plans of them to scale. In this way children will acquire a knowledge of the simpler properties of spacial figures, plane and solid, and learn to use the words associated with them correctly. They will also form clear concepts of area and volume through their measurements of the simpler regular figures and obtain valuable experience in the use of straight-edge and compasses. By the age of ten they may reach the measurement of angles and be ready for the simple field-work which has been given the name of "Boy Scout Geometry." Nothing in the nature of formal geometry will be attempted; but work such as this will not only add interest to the work of the primary school but provide an admirable foundation for future development.

The teacher will realise that behind all the arithmetical treatment of these real things lies the choice of the units of measurement, and that our British units are the source of most of his difficulties. Only rarely does our choice of unit depend on any physical fact; most are purely arbitrary and were adopted independently of other units. Nor in ordinary life do we measure things in terms of a single unit; we use different units at different times. We measure a line of print in inches,

the length of a room in feet, a cricket-pitch in yards, a journey in miles, the distance of a star in light-years. Or we may use two or three units in one measurement, as when we speak of so many pounds, shillings and pence. Before we can deal arithmetically with any quantity involving "mixed" units, we must know the relations of these units and be able to translate the measurement into terms of a single unit. We must know our tables of weights and measures.

To the facts which have to be memorised in the primary school we must accordingly add the tables of the weights and measures in common use in this country—money, weight, length, area, capacity and time. But a mere mechanical knowledge of these tables is not enough; the child must have such real experience of the various denominations included, that they stand for definite realities in his mind. The smaller units can be learnt from exercises that can be done in the classroom, the larger by establishing associations in the mind with familiar objects—thus the country child can associate the term acre with the area of a field which he knows well, the town child with the area of a football field, or at worst with the area of his school playground, and similarly for the mile, gallon, hundredweight and ton.

The importance of being able to convert measurements from one or more units to another is responsible for the "rule" of the arithmetic books which is known as "reduction." The treatment of this "rule" in the books, however, is often widely removed from its use in real life. No one is in the habit of reducing millions of inches to miles, furlongs, etc., or of converting miles into inches. Exercises of this kind have no other value than the so-called disciplinary one—to ensure accuracy in computation—and there are better ways of obtaining accuracy than by the performance of long-winded and arbitrary calculations of this kind. The practical utility of *reduction* is to simplify computation, and it should be confined to examples of this nature. It is less trouble to deal with 3 yards 1 foot 6 inches as $3\frac{1}{2}$ yards or as $10\frac{1}{2}$ feet than as it stands, or than as 126 inches. Reduction need never include more than three consecutive units—pounds, shillings, pence; yard, feet, inches; gallons, quarts, pints—and should take two forms (*a*) reducing from larger units to smaller (Reduce £2 11s. 6d. to sixpences), and (*b*) expressing smaller units as a fraction of a larger unit (Express 11s. 6d. as a fraction of £1).

All physical measurements are necessarily approximate, and will often include a fraction of the unit adopted. As we have just seen, the reasonable use of "reduction" also involves the use of fractional quantities. The idea of a fraction is familiar to children long before they reach the age of seven, and there is no reason why they should not be taught early to write down the simple fractions with which they have become familiar in their homes or in their handwork lessons in school. So long as the denominators are small, they can deal experimentally with the addition, subtraction, and multiplication of two fractions by means of a geometrical diagram long before any formal treatment of vulgar fractions is attempted, and in this way be saved from the bewilderment which children often show when they first meet with fractions as abstract quantities. But before the children leave the primary school they should have learnt to manipulate simple sums involving vulgar fractions, though fractions with denominators that are unlikely to be met with in life should be avoided and complicated examples should not be attempted. If these types are omitted there is no necessity to include "greatest common measure" and "least common multiple" in the primary school course, and we consider that they should be omitted.

The use of the straight-edge in measurement in inches and tenths of an inch, or in decimetres, centimetres and millimetres, will introduce the notation of decimal fractions and the addition or subtraction of lengths so measured will show that these processes as applied to decimals are essentially the same as those employed in dealing with whole numbers. Children in these measurements will obtain a real idea of the metre and its subdivisions, but the metric tables as a whole should not be included in the primary school course.

The processes of multiplication and division of simple decimals should be taught. If children have been taught to make rough estimates of the value of the answer to a sum before working it, there should be no difficulty in placing the decimal point correctly, and the mechanical rules for determining its place may be regarded at this stage as supplementary.

It is important that children should realise that vulgar and decimal fractions are only two ways of expressing the same measurement, and they should be able to interchange the notations readily in order to adopt the one which is most suitable for their purpose at any moment. There is no harm in their learning that the measurement can be expressed in a

third way, as a percentage, but the use of percentages as a regular practice in the solution of commercial problems should be deferred to a later stage.

A knowledge of the fractional processes is useful in simplifying calculation, and can often be used to convert a multiplication sum into a division sum and conversely. Thus, multiplication and division by 25 becomes a mental business when the numbers are thought of as hundreds and parts of a hundred, and £2 12s. 6d. is often more manageable when it is thought of as £2⅝ or as £2 + £½ + £⅛(1), or as £2·625. Text-books usually confine this use of fractions to particular commercial operations and teach it as "practice," but these operations are rarely necessary in real life, and when they occur are circumvented by "ready reckoner" tables. There is no need in the school to limit the use of fractions. Simple applications of "practice" methods may be taught in the primary school, but the method need not be stressed. Their use does not always materially save time and is often a matter of temperament. They help to relieve the monotony of over-much mechanical multiplication and division.

Practical measurements will give many opportunities for the use of decimals. Since, however, all physical measurements are necessarily approximate, it is absurd to carry the calculation beyond the limits of accuracy of the data. If the data are only true to the first decimal place, the calculation should go no farther than that place; all figures in the answer subsequent to the first decimal place are meaningless, and to allow them is to blur the child's knowledge of his limitations in powers of measurement.

The decimalisation of money is often useful in commercial applications, and should be taught. The fineness of the approximation used depends on the purpose for which it is employed. To use three decimal places only is not sufficient if multiplication by any number greater than eight is to follow. The converse operation is often more useful; here it is unnecessary to consider any figures beyond the third decimal place since for business purposes it is sufficient to find the value to the nearest penny.

In the preceding paragraphs we have dealt in order with the various topics which we think should be included in the

(1) Children are always interested to learn that the ancient Egyptians and Greeks were in the habit of expressing all fractions (except ⅔) in the form of a sum of fractions each with numerator unity.

arithmetical work of any primary school. We have laid stress on the formation of good habits of computation and procedure because we believe that to ensure these is an important function of the primary school. But the work should never be confined to mechanical drill in the use of what are after all arithmetical tools; some use of the tools is obviously needed. But the problems for the purpose should be quite simple, involving not more than two or three steps in the argument and no large numbers, and they should be related to the ordinary transactions of daily life and to measurements made or collected by the children themselves. They will include questions of the types usually grouped in the text-books under the name of "rule of three" (1) which can be worked by the method of unity or a fractional method. Children who have mastered the processes of multiplication and division, often discover this method for themselves long before they meet with it as a text-book "rule." The involved questions which have been set from time to time in scholarship examinations are in our opinion quite unsuitable for inclusion in the primary school course, and in this opinion we are fortified by the evidence of our psychological witnesses.

In all this we have had in view the child of ordinary abilities. We believe that the content of this course can be covered without pressure and without loss of thoroughness with a very considerable reduction of time from that now ordinarily given. We believe that the primary school can give this nucleus of knowledge and that the chief variation from child to child, will lie, not in the certainty of his knowledge, but in the speed with which he can use it. But in many schools there are likely to be children who will be capable in the time available of doing more than is involved in the necessary mastery of these fundamental processes. It would be disastrous both to their keenness and enthusiasm and to their habits of industry if they were allowed to "mark time." We think that these children should be allowed to go forward to the new work of which they are capable.

THE STUDY OF NATURE.

Nature Study should form an integral part of the curriculum of every school, but whilst its cultural value cannot be denied in the education of any child, town or country, the study

(1) The formal treatment of ratio and proportion should be left to the later stage of education.

has an additional significance in the mental development of the country child. In rural areas where the home life of the children generally centres around outdoor pursuits and where contact with nature is intimate and many sided, nature study should lead to that breadth of outlook and grasp of essentials which raises the value and increases the dignity of rural occupations.

The necessary grasp of essentials can only be attained if the child handles living things and thus becomes aware of the order and method required for successful cultivation. Gardening(1) has in the past been confined almost entirely to older scholars. The removal of the older children will automatically release the school garden which can be cultivated in a manner suitable for the younger children. Indeed, the garden provides a more appropriate space for the experiments in nature study than the classroom. The problems presented are so inter-related and associated that any attempt to classify them in terms of subjects is not only undesirable but almost impossible. For this purpose the garden should be remodelled so that it is, to the child, a place of order and of pleasant colour schemes and beauty, and not merely a group of isolated plots for cropping purposes only.

If conditions are reasonably favourable, the garden can be a series of seasonal studies in design, linked up with measured plans and schemes, thought over, talked about, and generally prepared in the classroom. The designs of individual children will lead to the laying and measuring of paths and borders of appropriate widths and shapes, the arranging and grouping of seasonal shrubs and plants to secure flowers at all times of the year. In addition, there should be some opportunity for laying out a small lawn, for building a rockery, a bird bath, nesting boxes, a sundial and so on. In all this work, there is necessity for the exercise of care in the recognition of plants at their different seasonal stages in order that disaster may not occur when beds are being cleared of weeds.

Naturally many of these gardening operations will co-ordinate with the seasonal operations of the farm, and a few specimens of farm crops can be grown for the intensive observation of the children, e.g. potatoes, corn crops, various roots, some of which should be allowed to flower in order that the seeds may be collected.

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(1) See also Section on Handicraft, page 199.

Beside this nature study associated with the garden, there are some other general aspects of nature which appeal to all, such as the curious ways of animal life, garden fires, still and running water, stones and earth. The child will naturally become acquainted with such aspects as these through rambles and nature walks, and discussion around them will lead to the necessity of experiment and careful examination which can best be successfully undertaken in the classroom, regarded as a laboratory for this purpose. The classroom can therefore fulfil two purposes: (*a*) the awakening of an enquiring interest in the physical changes which accompany the seasons, the importance of spring rains and a rising temperature in inducing spring growth, an accurate record of the various ways in which seeds germinate, the influence of light, observation of different growth habits, e.g. climbing plants and rosette plants like the daisy, and some discussion of growth in plants in relation to growth survival, and (*b*) the arranging of nature exhibits in the form of a general record of the changing face of the countryside as the seasons progress, the bursting of buds, the flowering of trees and plants, the ripening of fruits, the dispersal of seeds.

It is undesirable that the detail associated with many so called botanical studies should be over-elaborated. It is not the minor details associated with one or two plants which matter, so much as the general recognition by the children of the wealth of life around and its various forms and manifestations.

The problem of dealing with animal life in school obviously presents many difficulties. An aquarium may be kept without causing cruelty if the teacher understands the necessary balance between its plant and animal contents, so that it is unnecessary to disturb the aquarium except at long intervals. Breeding cages for insects are also possible. Care should be taken only to stock them with larvae for which an abundant food supply can be found. It is not necessarily the rare and uncommon which provide the most fascinating studies of life histories. In certain appropriate cases it may be possible for children to bring their own pets to school for a few days. It is essential that there should be no possibility of any animal being left without food or attention. In any case special arrangements must be made for the care of an aquarium during the weekends and school holidays. There are so many live objects available that it is inadvisable to create a museum of dead things. Plant and plant products which are common

articles of food can be read about in well illustrated accounts. Similarly, animals such as the beaver, the fox, the wolf and the swan have associated around them much attractive literature.

The classroom is the natural place in which to build up a record of observation. The keeping of a gardening diary, for example, will encourage descriptive work. In the same way, painting in colours and simple craft exercises will suggest themselves which afford the enjoyment of producing simple forms of beauty. All this work can be linked up through little books of the loose-leaf type which can be compiled and finally bound in a cover of the child's own design. Further topics, which lend themselves to work of this kind include simple studies on the crocus, the caterpillar, the tadpole, etc.

Although nature study for town children should in general principle resemble that of country children, there is no doubt that their work is heavily handicapped. Teachers often find the provision of materials for study a heavy burden, and children have less opportunity for exploration and adventure on their own account. Nevertheless many city schools have proved that satisfactory work can be done when they are directed by a teacher with vision and a general interest in the subject. Much can be done even with a limited supply of material. The effort to supply the classroom with a succession of either cut or growing plants and flowers is always worth while. It supplies the right background of associated impressions for the healthily growing child and relieves that formality of wall and furniture which gives the impression of "institution" rather than "school." The general scope of the work can comprise the following :— (*a*) Observations on the weather, weather charts and nature calendars ; (*b*) more detailed examination of animals and of plants in season which are found in gardens or within easy reach of the school : special attention to trees and the rearing of butterflies and moths ; (*c*) observations on the appearance and habits of common birds in towns, feeding of birds in winter ; (*d*) continued observation of bulbs, underground stems, and seedlings, grown by the children in the classroom, and of some common pond animals in the aquarium ; (*e*) where a special room or part of the school hall is not available for the purpose, practical work in connection with a "nature table" where seasonable and curious plants are displayed and provided with explanatory labels.

Although nature study will form the main part of the work in science of the primary school, it should not be the whole of that work. Physical facts play so large and obvious a part in modern life that they cannot be neglected entirely in the school, and even young children can properly be introduced to those outstanding facts which come within their everyday experience. The choice of topics should be closely related to the children's interests and their treatment should aim at providing an answer to their inquiries which will satisfy them for the moment, without destroying their wonder, or quenching their natural curiosity. "How it works" is a good practical guide for the teacher in all this early work. The lever in its practical uses, the magnet and the mariner's compass, the effect of heat on water—these are the kinds of topic which seem suitable in the primary stage. But no attempt should be made to build up an organised body of science at this stage; the aim should be to interest children in just those physical phenomena which they meet in their ordinary experience.

Many natural phenomena have a relation to other fields of activity. Thus, the observation of the apparent movements of the sun, moon and a few stars, taken in connection with the sequence of day and night and the seasons, arises naturally in the introductory work to geography, and has been already mentioned in the section on that subject.

MUSIC.

The importance of good music teaching in the early stages cannot be too strongly urged. The facts of daily life do not form a corrective to poor teaching in music, as in some other branches of the curriculum, and unskilled teaching in the early stages may quite easily blunt the musical sense that nearly all children possess, thereby making it much more difficult both for the pupil and teacher in the later stages. It is generally agreed that if the child in the early stages learns a considerable number of songs of a simple character he has more chance of developing the musical sense. These songs should be chosen carefully. A song is not necessarily good, or even appropriate for children because it is childish. Good clear melody and good poetry are the essentials. This does not, it must be observed, exclude nursery jingles, or much poetry that Mr. Gradgrind would have called worthless.

The importance of inculcating a sound melodic taste cannot be over-estimated. For this purpose the use of national and folk songs is strongly recommended. The melodic directness of the songs makes an instant appeal to the child, and forms an instinctive and never failing criterion in after life. The aim should be to learn a great number of these songs, rather than to practice a few with a view to finished performance, although breadth of treatment, intelligent phrasing, and undisturbed rhythm must be secured. The more simply they are sung the better the effect will be. Such songs may also form the basis of the early teaching of what is known as "musical appreciation." Elementary ideas of form, melodic outline, rhythmic balance, and climax can be learned from them. Every child should be steeped in the strong British idiom and musical flavour of these songs. Nothing can form a sounder foundation for a musical education. It is of vital importance that the accompaniment should be musically sound, both in its composition and in its performance. Piano-playing is a desirable accomplishment for the teacher of young children. Experienced teachers agree that young children's voices as a rule are not naturally beautiful. Every effort should be made to secure that the songs are sung beautifully, with quiet, easy tone. Some children are inclined to sing at full strength. The teacher must get them to realise that in so doing they are making a beautiful thing ugly. As we have pointed out in Chapter III, the artist is strong in the child, and it is to this side of the child's nature that the teacher should appeal. Useful suggestions for exercises will be found in the last edition of the Board's *Suggestions to Teachers* (1927). In this connection, we would urge that teachers should try, so far as possible, to associate the pronunciation of words in music with the general training in correct speech. Many of our witnesses pointed out that it is not uncommon, especially in rural schools, to find that the children pronounce their words much better in singing than in reading or speaking.

Of recent years many experiments have been made in the teaching of the more theoretical part of music to young children. Many artificial aids in the form of pictorial representations of the stave have been found to be of doubtful value, and much that is valuable has emerged from the testing of various methods. Thus the percussion band has been valuable as a means of cultivating the rhythmic sense, the beginnings of form in music, and concentration of the mental powers. There seems to be a growing consensus of opinion

that the earlier staff-notation is taught, the better. It has been found that the actual making of minims and crochets and quavers with pencil and paper is invaluable as an aid to the understanding. This leads logically to the taking down from dictation of short and easy musical phrases both of pitch and rhythm. In this connection, we would urge that all pupils in the class should have their own manuscript books. This kind of work should be taken in conjunction with the teaching of sight singing. There is no reason why a child of eleven should not be a fairly proficient reader from the staff-notation after two or three years of steady progressive work.

The subject of musical appreciation has lately occupied the attention of teachers, perhaps to the detriment of other branches of musical teaching. At first undue emphasis was laid upon the importance of programme music or music with a story, or music that "painted a picture." Other and more important aspects were overlooked. The best results have been obtained when the children have accompanied the music with movement. In this way the essential mood of a piece of music may be grasped, the interplay of themes noticed, and the general form of the piece understood.

The educative value of music has been often overlooked in the past. It has been sometimes mistakenly regarded as a soft relaxation. Its spiritual and mental stimulus has not been adequately appreciated. If taught on sound lines it should react upon the whole work of a school. In no subject is concentration more necessary ; in no subject is there so much scope for the disciplined and corporate expression of the emotions ; in no subject is there such an opportunity for generous response to be made to the appeal from the teacher. For these reasons it would seem desirable to allocate an ample allowance of time to this subject in the primary school. The lessons should be short, and as varied as possible. The rhythm in music might well in some way be associated in the pupil's mind with rhythm and ordered sequence in verse and in dancing or in physical exercises. The gramophone and the wireless may well be used for pupils below the age of eleven(1). Very short concerts may be given in which the children should take a definite part, however small. It is impossible to over emphasise the importance of a really good pianoforte(2).

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(1) See Chapter IX, page 121.

(2) It is found in actual practice that an equally important thing is to see that the piano is periodically tuned and kept in repair.

DRAWING AND ELEMENTARY ART.

The inclusion of drawing and elementary art in the curriculum of the primary school has, it is generally agreed, a two-fold purpose: to cultivate in the children sufficient skill to enable them to express their own ideas in some form of art, and also to stimulate the growth of such sympathy and sensitiveness as may lead eventually to aesthetic appreciation. Both of these objectives can be realised only through activities and experiments on the part of the children themselves, since this stage of school life is one of doing and making rather than of acquiring information, and the teacher may guide and direct but not dictate.

Creative and constructive art may be developed in many ways, and if the variety of ideals and methods suggested by our witnesses is significant, the particular temperament and circumstances of teacher and child must, to some extent, determine the most appropriate course to be adopted. In general, however, there are two main lines of development; one, the use of graphic or plastic forms imitative of the visible appearance of life around the child, by means of which he expresses his ideas in line, colour or mass; the other, more definitely constructive in character, supplying opportunities for using tools and handling materials, suggesting considerations of purpose and fitness as well as the representation of beautiful or interesting forms.

It is clearly most necessary for a teacher of the youngest children in the primary school to ascertain what stage the pupils have reached in their own spontaneous drawing and modelling, not only in order to determine how they may be guided, but also to discover what subjects are of outstanding interest to them. It is normally found that children of seven or eight years are just emerging from the period when their drawings are symbolic, when they express knowledge without caring whether the visible form of expression is realistic. Gradually rejecting these scribbles and symbols, they begin to draw what they see, and they intend the drawings to convey a definite meaning to other people(1). This desire for greater realism usually leads to a certain dissatisfaction with their own efforts, and they may abandon drawing as a language unless they can acquire increasing skill to express their rapidly increasing range of ideas, or receive inspiration or guidance to progress further.

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(1) See Chapter III, page 51.

This situation presents a great opportunity to the teacher as surely as it holds a snare and a temptation. By training mere skill it is possible to foster the desire to draw, but it is essential that the art should remain within the child's natural understanding and ability, and should not assume an artificial and sophisticated quality because undue emphasis is laid on technique.

There is too often a tendency to impress on the child's work a mature and usually a photographic style ; in a maze of technical studies the child ceases to select, observe and record for himself, and merely does what he is told. It is salutary for a teacher to appraise, with quite impartial judgment, a child's crude drawing of a man or animal in some characteristic action, and to compare this with his laboured representation in pencil "shading" of a flower pot, then to decide which actually has more truth or artistic merit, and what is the precise value in the child's mental or aesthetic education of the technical exercise.

Drawing should at this or any stage of school life remain an interest and joy to the child, and in these early years he should be encouraged to draw things which have an attraction for him, such as human figures, flowers, animals or any of the significant forms of the street, the fields or the sea shore. He should draw rapid movements and active life from memory, and also attempt a direct and more intense observation of the subjects of his choice. He should gain further inspiration by being encouraged to use other media besides colour. He will discover, by this means, how to translate his impressions or visual images into the limited form imposed by his materials, experiencing as he does so something of the artist's perception of the terms of his art. All these activities will, it is hoped, help to widen the child's horizon of interest and knowledge, and the teacher's part is clearly to ensure that the supply of inspiration and material does not fail. In addition, exercises thoughtfully and cautiously devised which are intended to increase ability to express his ideas should be given in answer to a felt need on the part of the child, not from any preconceived notion as to the type of work he should produce at any particular stage, and this assistance should not be given before there is such need, nor omitted altogether so that the child's imagination is hampered by lack of skill in handling tools or mixing and matching colours. In any case such guidance will be doubly effective if the child himself recognises its exact purpose. But it is also possible to give some help

without imposing a mature style, or even associating it with ideas at all; studies in colour, pattern making, lettering, and various simple crafts are of such a character.(1) It is generally agreed that all children should feel and recognise the joy of colour, and the pleasure of rhythm and harmonious pattern. Opportunities for experiencing colour will include practice in handling paint, pastel, coloured paper, stuffs, threads, etc., while rhythm is as much felt in such activities as pattern making, weaving and stitchery as in dancing, verse speaking and singing. It becomes apparent as these activities develop that all branches even of elementary art are connected in a very subtle way. Pattern making, for instance, affects the placing and arrangement of illustrative or representational work, and such considerations as spacing, order, balance and composition are inevitably introduced. The part played by colour in producing pattern, and in the working out of crafts must not be overlooked. Children will be ready to discover that the shapes suggested by many of the traditional crafts, such as by woven, twisted, plaited or interlacing threads, coiled clay or chequered bricks are intimately connected with the patterns which they themselves devise for pleasure or ornament. The symmetry and grace of trees and plants and the shapes of such natural forms as shells, wings, fish scales, leaves, honeycombs, all take their place in the same course of appreciative study which, in a simple, spontaneous fashion leads gradually to the subject of design.

So far the activities referred to have been those which give an outlet to the child's instinctive sense of pleasure in form, colour and movement. It is hoped that he will also be encouraged to give shape to his ideas about the subjects and incidents which appear in literature, history, geography and nature study. These will not only supply him with the mental stimulus of a wide range of illuminating subjects, but will also suggest to him the difference between imaginative or descriptive illustration and the formal, accurate drawing that is necessary in any scientific record. Nor will his ideas be adequately expressed in drawing and painting only. Many of his impressions can be given reality more readily by an attempt to construct models to represent them, and manual skill and dexterity can be developed by handling materials such as cardboard, wood, metal, clay, leather, etc., whose limitations, possibilities and recalcitrant qualities

(1) See also Section on Handicraft, page 197.

present new interests and problems. The necessity for measuring, folding, ruling and drawing with exactness and precision will be convincing when related to a definite purpose, while, on the other hand, the child who can make a rapid sketch or judge distance and proportion by eye will demonstrate the value of such skill in practical issues. These varied activities lead to the recognition of the special gifts of individual children, and thus to the possibility of projects or of co-operative efforts in which the skill and taste of different members of a group can be fitly utilised.

The Development of Aesthetic Appreciation.

The question of making a deliberate attempt to develop some sort of aesthetic appreciation(1) in children between the ages of seven and eleven is a delicate one, and can probably only be approached indirectly. The most potent influence will undoubtedly be found in the efforts of the children themselves, their response to colour, form and rhythm, their imaginative sympathy with nature and with the subjects of descriptive art, and their first realisation of the terms of art, e.g., painting or modelling through their own immature productions in various media. These spontaneous impulses will help to form a foundation for a more conscious appreciation of the great achievements in fine or applied art, and it is probably undesirable to expect or encourage more formal analysis at this early stage.

But there are, in addition, two very important factors in this early development of art appreciation. One is the influence and personality of the teacher, and the other the character of the child's environment. There is no doubt that the most successful achievements in this field will be made by a teacher who is personally responsive to aesthetic impressions, and is able to recognise and enjoy the simple forms of aesthetic significance in the child's own life, in speech, games, movement and constructive activities. Just as it is unwise to impose a mature judgment upon a young child's spontaneous response to pictures or other artistic forms, so the teacher must use tact and discernment in dealing with the class of ideas produced by the differing standards and appearances of school and home. It is generally agreed that the child's surroundings should, as far as it is possible, be

(1) See also Chapter III, pages 44–47.

orderly, harmonious and beautiful, and many references have been made by witnesses to the refining influence of flowers, pictures and tasteful arrangements of coloured materials, pottery, etc. But it is also important that the children themselves should take some responsible part in the care and decoration of the schoolroom, and that their own choice and effort should find some form of expression there.

It may be said, therefore, that a single principle runs through the treatment of this subject in the primary school, since both skill and appreciation depend largely on the child's capacity to produce by his own efforts a form in some way corresponding to that which is present in a work of art.

HANDWRITING.

The simplification of the dual task of teaching the elements of reading and writing to infants, which arises from the adoption of a single alphabet, is so well recognised that unjoined print script is now almost universal in the infant school. The lettering adopted is so similar to that of ordinary print that only in the formation of the two letters *a* and *g* is there any material difference, and some publishers have eliminated even this difference by printing reading books for infants in the print script alphabet. The print script alphabet has the two great advantages of extreme simplicity and great legibility, so that for young children and those of a low mental age it would appear almost essential.

Another important reform adopted in recent years is the postponement of the use of the pen until the age of eight or nine. It is not long ago that a great deal of time was devoted in infant schools to laborious practice in the use of the pen whereby round-hand writing could be performed by children of the age of six and even five; but it has been discovered that what took many months to learn at that stage owing to the lack of muscular control possessed by the fingers of such young children can be rapidly acquired when finger control is more fully developed and the handling of the pen a comparatively easy matter.

On general grounds it is desirable that the transition from the infant school to the upper stage of the primary school should be made as easy as possible, and that such changes as are necessitated by the different aims and objects of the school for pupils between the ages of seven and eleven should be introduced by easy and gradual steps. While, therefore,

it is necessary that by the age of eleven the child should be able to write in ink with good legibility and fair speed, it is desirable that this should be achieved by slow degrees instead of by a sudden change from the unjoined pencil script of the infant school to cursive writing in ink immediately the children enter the upper stage. Experience has shown that the two changes (*a*) from unjoined to joined letters, or, if desired, to round-hand writing, and (*b*) from pencil to ink can well be made at different times, and it will be sufficient if these objects have been achieved during this stage. Some teachers take the view that a suitable time for the change from pencil to ink is about the age of nine and for the change from unjoined to joined letters not later than the age of ten. The use of ink should be gradually introduced, as for instance by allowing the children during their first term of writing in ink to do only their mechanical written exercises by this method, and adhering to pencil for such exercises as require a good deal of thought and consideration, e.g., arithmetic and composition. As soon as some facility in the use of the pen has been acquired the child may be expected to do most of his written work in ink.

Many teachers have found that the transformation from unjoined to joined script—not round-hand, which is a much more difficult change—can well be made in one month provided that it be postponed until the tenth year, and there are many instances where this has been accomplished with excellent results in the time mentioned.

The true criterion of good writing is that it should be legible and clear. The style adopted should be such that the writer may be capable of attaining sufficient speed to put down his thoughts without being unduly hampered by laborious manuscript. So long as these requirements are met, the actual details of the style do not matter. It must not be forgotten that in addition to a cursive hand for general purposes schools may and do teach artistic lettering and manuscript writing of various kinds. These, while hardly possible for everyday use, will undoubtedly have the effect of improving the ordinary writing. Skill in this direction hardly comes within the scope of the primary school.

HANDICRAFT.

We have already touched upon "education through activity" in its wider implication, as the discovery of living centres of educational interest, through contact with which

the real value of book learning may be perceived by the pupil. In the present section we treat this aspect of education in its narrower sense of manual occupation.

The realistic trend of teaching which very many children will require in the secondary stage will be anticipated in the primary school. The practical arts cannot be taught here merely as a relief or diversion; because they will form the background to the later education of all those pupils who are found to respond best to teaching which is largely based upon manual activity. Nor is this the only reason why the realistic element in the curriculum of the primary school should be emphasized. As we have remarked elsewhere, the conditions of modern industry are such that there is little inducement even for the skilled craftsman to develop that high degree of persistence and will power which was essential when the same craftsman had to see one complete job through from its beginning to its end. Not only, therefore, have the schools to lay a foundation of technical skill and of sympathy for pure handicraft, but, so far as possible, they have to make up for this deficiency in the later industrial training of their pupils.(1) This task must be begun in the primary school if it is to become a dominant factor in the secondary.

The methods of craft teaching acquire a further positive value as soon as we perceive that the attitude of mind which craft teaching should induce is the mental attitude that is most healthy for all learning. The central fact about craft work is that it is an active pursuit with an end in view towards which, with the tools and material at his disposal, and with the wise guidance of his teacher, the child is finding his way. The good handicraft teacher does not give training in a routine process so that the pupil may acquire an instinct to cope with one set of conditions only; he seeks to give his pupil the power of finding ingenious solutions under all sorts of conditions. Furthermore, handicraft gives a meaning and a practical application to the teaching of design and the appreciation and use of colour. In the primary school, owing to the character of the materials that will be generally used and the way of using them, training in pattern making and elementary training in design are an inevitable consequence of handicraft teaching.(2) Handicraft has also a use, if in the primary stage a limited use, in illustrating the teaching of

(1) See pages XXIV–XXV.

(2) See section on Drawing and Elementary Art, page 191, where this aspect of handicraft teaching is more fully treated.

history and geography, and in helping children to learn arithmetic, geometry, and the elementary principles of physics; while, on the other hand, the story of the various crafts, being a significant part of the story of mankind, will provide valuable material for the pupil's reading when suitable books are available. Finally, there is a social significance in craft teaching, when the pupil sees the work on which he is engaged as typical of processes that have in past ages been devised by man to meet his living needs, and as the key to that vast and complex industrial machinery which the inventive genius of man has evolved out of these small beginnings.

The elaboration of craft practice is more particularly the concern of the secondary teacher, because, after the age of eleven, the special aptitudes of children can be discerned more clearly than in their earlier years. But such considerations as those which we have just mentioned make it important that, even in the primary stage, the crafts in which the children are occupied should be authentic and genuine crafts, or should lead up to genuine crafts, and that the jobs which they undertake should be complete jobs. The danger of craft practice degenerating between the years of seven and eleven into a mere pastime arises from two causes. On the one hand, with very young children the joy of making things, however trivial, is its own justification, and the character of the thing made is not important; it is therefore not surprising that there should be an inclination to ascribe to similar occupations in a later stage rather a negative than a positive value, and to use them merely as a relief to verbal methods of teaching. On the other hand, craftsmanship and manual occupation, as they are understood in the school workshop and garden, have traditionally been deferred until after the age of eleven. Thus, the years between seven and eleven may easily become, for real training in handicraft, almost a fallow time.

The fact is that the actual range of the manual occupations suitable for the primary school is not appreciably narrower than that of the secondary. The difference between the earlier and later stages of handicraft teaching is not one of kind, but of degree. There are few school crafts that may not have their beginning in the primary stage; and no craft is for this purpose greater or less than another. But some tools are more difficult or more dangerous to use than others, some materials are more intractable than others, and all materials are not readily obtainable in all districts. Within such

limitations the teacher will make his choice; but primarily he will be guided by his own skill in some particular craft, and by his own love for it.

We assume that the primary school will contain a "practical" room, or a space set apart for practical work, with suitable furniture and fittings; and that three or four hours in the week will be given to handicraft with drawing.(1) The existence of a workroom implies that the teacher's choice of crafts should not be indiscriminate, and that there should be a unity and a backbone of purpose in his scheme: it does not imply that prolonged occupation or fine work should be expected of very young children. The "free" occupations of the infant school should lead, by easy and natural gradations, with steadily growing accuracy in observation, measurement, and technique, to the more definitely ordered tasks of the later primary stage; they should also grow in reality, as the infantile joy in mere making begins to wane. In order that the teaching may not be discontinuous, much of what the child does for some time after leaving the infant school should, however, be directed by his own interests; he is far more likely to become acquainted with the broad principles that govern design and construction through experimenting with toys and moving machines, and by improvising models of them from strips, blocks, wheels and axles, than by making, to the teacher's design and measurement, trays and boxes out of paper and cardboard.

The important point is that, even in the primary school, the things which the children make should be worth making; and that, whatever the material the children are using, they should be engaged in a genuine craft. Thus, even the elementary occupation of modelling in paper and cardboard should form part of a graduated scheme which leads up to an authentic craft, the binding of books.(2) Many other things that involve the fundamental processes of bookbinding may be made by the way—not paper furniture and boxes, but real and useful things such as calendars, writing pads and cases, blotters and blotting pads, files and portfolios.

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(1) Ability to prepare dimensioned hand sketches of simple objects, to draw plane figures such as the square, circle, hexagon and octagon, and to use compasses, rule, and set square in the production of drawings, may reasonably be expected of pupils by the time they leave the primary school. See further the sections on Arithmetic and on Drawing and Elementary Art, pages 178 and 191.

(2) See also section on English, page 162.

There are other materials, besides paper and cardboard, which are suitable for genuine craft practice in the primary school. Certain elementary forms of weaving in coloured thread, wool, and raffia, on simple cardboard shapes will already have been attempted in the infant school; these are valuable in teaching colour and its harmonies, and they will be developed into the weaving of braids, girdles and scarves on small frames and table looms. These latter may be of such simple construction that they can be made by the children themselves. The light exercises involved in building the looms, the arranging of the warp threads, and the preparation of the shuttles to effect a prepared design, are, together with the actual process of weaving, tasks in line with tradition and rich in historical association.

Needlecraft is closely allied to weaving. It has a long history and tradition in the primary school. In the later changes that have come over the teaching of this subject, largely due to the greater use of the sewing machine, there has been much gain and a little loss. The wearisome repetition of processes, the use of fine materials and microscopic stitches, are things of the past. They have been replaced by the planning and making of complete articles, which call for manipulative skill and a general handiness in dealing with fabrics. Even young children are trained on production, and both in the arts of making and mending and in the nature of the materials used there is an air of usefulness. But there has also been some loss. In the needlework displays of primary school children a lack of finish and attractiveness may sometimes be apparent. Beauty of colour and design with a decorative use of stitches should be encouraged, and daintiness and accuracy can be secured without that fine sewing which proves an undue tax on eyesight. Perhaps the "finish" of much of the older work may be revived, without producing articles that are tedious in the making or lacking in usefulness and desirability. Needlework in the primary school will include knitting, which is not only a household art, but in some areas is connected with the local industries. The teaching of the other household arts of cookery, laundry, and various branches of housewifery, will be deferred until the secondary stage. Another craft, nearly related to weaving, and even more primitive, is basketry. Here, the scope of the work will be more limited than in raffia-working: willow will be found too intractable for young children, and they will be confined to cane.

The use of plastic material is general in the teaching of infants. In some districts, clay-modelling may develop in the primary school into simple moulding and forms of coiled pottery in self-setting and potter's clays; and this may lead to the use of the potter's wheel. No craft affords a finer training in the appreciation of form; and no craft better illustrates man's ingenuity in subduing nature's resources to his own service by the use of his hands and a few rough tools. Like many others that we mention, its history also is rich in material for classroom study. Its practice, however, cannot be general because, if it is to have reality, some means of firing the pottery must be available.

Wood and metalwork mostly require the introduction of tools that are sharp and difficult to use. It may, however, be possible in some schools during the last two years to incorporate prepared wood and light sheet-metal and wire in a variety of exercises that are connected with other crafts. Vices, hammers, screw-drivers, small saws, files, pincers and pliers can be used, as well as various measuring and gauging tools; and the fret-saw, for the making of models and toys out of ply-wood, is a great favourite with young boys. But this equipment should not form the basis of a course in which the different tools are introduced in systematic order: these should be regarded as standard aids to construction, to be used as they are found to be fitted for their purpose, at which times their special technique will be explained by the teacher.

Primary schools should have a garden, or a place, however small, where things may grow. A three-year course, involving the simpler and lighter of the gardening operations, is possible. It will begin with flower-gardening between 8 and 9, flowers and salads between 9 and 10, with the addition of a few vegetables and small bush-fruit in the third year. With flowers may be grown various agricultural grasses, a small plot being given to each kind; and there should be a plot for bulbs. The sowing of seeds, thinning and transplanting, weeding, hoeing, watering, and tending generally, teach the fundamental principles of life and growth. The pupils learn at first hand about nature and seasonal change; and the use of a fork, a trowel, a barrow and a small spade is not beyond their physical powers. Many great teachers of the past began their work in a garden; they found that it touched their indoor teaching at many points, and made it real(1).

(1) See further the section on the Study of Nature, page 183.

PHYSICAL TRAINING AND GAMES.

The physical training recommended by the Board for elementary school children between the ages of five and fourteen includes systematic physical exercises based broadly on the Swedish system, outdoor games suited to the school playground and the playing field, dancing, swimming, and other forms of recreative activity.

A scheme of systematic and graded exercises was issued in 1909 by the Board of Education as a syllabus for the guidance of teachers, and was revised in 1919 in the light of ten years' experience of its use. The exercises included are carefully selected with a view to the circumstances in which they are employed, namely in the training of both boys and girls of varying degrees of physical strength and development, with due regard to the fact that they have in many instances to be taught together in "mixed" classes often under unfavourable conditions and by teachers who are not experts in the subject. In the wide-spread introduction of a system of physical exercises to be applied in these circumstances it was essential to take account of individual differences of age and sex and so far as possible to ensure that nothing should be included which might make excessive demands upon the weakest child. It is probable, therefore, that in the Syllabus the physical capabilities of the children have been rather under estimated. Experience goes to show that with due care to avoid excessive repetition the exercises may be safely performed by children of comparatively weak physique.

The effects produced depend not merely on the character of the exercises, but in larger measure on the manner in which they are selected and performed. The Syllabus points out to teachers that the object of the training is to secure the careful and well-balanced development of the physical powers of each individual pupil, and that this result will be achieved not by mechanical methods but by appropriate adaptation to the capacity and needs of the particular class and even of each member of the class.

In the matter of the organisation of play, the Syllabus points out that the choice of games should be determined by the age, ability and physique of the players, and the actual conditions under which the game is to take place. A graded list of playground games is given in the Syllabus. Many of the simple games for the youngest children may be suitably played by boys and girls together. For the rather more

complex games, suited to the older children in primary schools, in which a higher degree of skill and energy is demanded, it is the usual practice in "mixed" classes, where numbers permit, for the boys and girls to organise separate games.(1) When the usual field games, football, netball, etc., are taken up, this separation of the sexes is generally complete.(2)

Ideally, it is doubtless desirable that children should be graded for physical training according to sex and age, and that individual children of very poor physique should be dealt with separately. With such a classification a greater degree of progress should be possible for the pupils. Unfortunately the normal school organisation precludes the complete attainment of this ideal. The usual class arrangements provide a fairly satisfactory classification by age. The organisation of the new schools for pupils over the age of eleven will generally permit of a grouping by sex, but that of the primary schools will not always allow of this, and in these schools continued reliance will need to be placed on the safeguards with reference to individual differences of sex and physique which the Syllabus provides, and which customary practice based now on considerable experience has established.

HEALTH EDUCATION.

The majority of our witnesses were of opinion that health education must, for the most part, be given indirectly as an integral part of the daily life of the school. It is most important that the school premises and equipment should provide a civilising environment favourable to the foundation and practice of healthy habits. For example, roomy classrooms with abundant sunlight and ventilation, well arranged and properly equipped offices and lavatories with a supply of hot water, suitable cloakrooms, facilities for drying clothes and boots, and adequate playgrounds are essential. Dining rooms and kitchens are of great importance.(3) Proper facilities must also be provided for exercise and for rest within the school hours. Our witnesses agreed that formal lessons on hygiene for children between the ages of seven and eleven are of minor importance compared with the formation of right

(1) See Chapter II, § 33, also Appendix II, p. 228.
(2) See also Chapter VIII, page 122.
(3) See also the chapter on the Premises and Equipment of Primary Schools, page 117.

habits through training in those practices which are the foundation of a healthy life. Such training may include, among other activities, the practice of cleanliness of the hands and face, hair and teeth ; appropriate breathing exercises ; periods of rest and quiet ; keeping clean and tidy the classroom and its equipment, e.g. the cupboards ; the ventilation of the classroom. Suitable subject matter for health practice and health talks for young children up to the age of eleven are set out in the Board's *Handbook of Suggestions on Health Education* (1928). Throughout the whole primary school stage an effort should be made to develop in the children a sense of responsibility in matters relating to hygiene.

In general we agree with the view expressed in the Board's *Handbook of Suggestions* (1927) to the effect that " The study and practice of health must form, from the first, part of the everyday life of the School ".(1)

CORPORATE LIFE AND THE TRAINING OF CHARACTER.

As we have shown in Chapter III the view of psychologists and teachers is that in general the corporate sense is not much developed in children under the age of eleven. Nevertheless in many primary schools efforts have been made with a fair measure of success to develop the incipient team spirit, especially among the older children. For instance, in a number of schools the teachers assign to some of the older children small responsibilities calculated to foster latent powers of initiative and leadership ; modifications of the house and prefect system are other devices to this end which have been adopted in many schools. In some of the small rural primary schools the teachers sometimes appoint older children as " helpers " to the younger children in the school and in the playground. It is well to remember, however, that many of the children are unduly weighted with responsibilities in the care at home of their younger brothers and sisters. It is not necessary, indeed it may be inadvisable, to introduce such responsibilities into their school life.

In addition to the ordinary instruction in the various branches of the primary school course, there are other highly important aspects of education for which provision should be made.

(1) See also *The Health of the School Child*, 1927, page 76, and *The Health of the School Child*, 1929, pages 37–55.

Every opportunity should be taken, whether in the ordinary lessons or by means of short talks, to inculcate good manners, courtesy and consideration for others, and to develop in the children self-reliance, self-control, thrift, punctuality, kindness to animals and fair play. The midday meal, which is now taken by the pupils in some primary schools, should afford invaluable opportunities for training the children not only in hygienic habits, but also in manners and general social sense. The school and its general environment must undoubtedly exercise great influence on the formation of character and this influence will be enhanced if the active interest and co-operation of the parents be secured. Parents' associations, open days, and school sports afford valuable opportunities for contact between teachers and parents, as does also the practice which has been adopted in a large number of primary schools of sending annual or terminal reports to the parents.(1) Such reports should not, however, be regarded by the teachers as an alternative to direct contact with the parents, but rather as an important factor in co-operation with them.

CURRICULUM AND METHODS OF TEACHING FOR RETARDED CHILDREN IN THE PRIMARY SCHOOL.(2)

The report of the Joint Committee on Mental Deficiency rightly lays stress on the fact that much further research is required on the subject of suitable curricula and methods of teaching for retarded children. There is no doubt that excellent work in this field is being done in a number of individual schools, but hardly any attempt has been made up to the present to pool the experience thus acquired. Further inquiry and research are urgently needed. In general, it may be said that the problem of devising a suitable curriculum for the retarded children has not advanced much beyond the experimental stage. The experience hitherto acquired has been admirably summarised by Professor Burt in a Report on *Provision for Backward Children* which was published by the London County Council in 1925, and which has been reprinted, in part, as Appendix A to the *Board's Handbook of Suggestions for Teachers* (1927).

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(1) See also Chapter X, page 130, and Chapter XI, No. 68.

(2) This section does not refer to the "more retarded" or "educably defective" pupils who are transferred to "special schools."

Curriculum.

It seems to be generally agreed that the curriculum for the retarded child should differ not only in range but also in quality from the curriculum in vogue for the ordinary classes for normal children.

(a) *Range.* The aims in view must not be too ambitious. In the ordinary curriculum much of the work in the lower classes or groups is really preparatory to work in the higher classes. For the type of retarded child who is innately dull, work which has no intrinsic value of itself and merely prepares the way for more advanced studies should be excluded from the curriculum. His work in all branches of the curriculum should be directly related to the comparatively simple needs of his after life. For example, he should not be troubled with the spelling of words which he will never think of using in his written work.

The retarded child will progress at a pace which at best will be only three-quarters the rate of the normal child, and at worst little more than half that rate. It is accordingly useless to attempt to cover the same ground with him as would be covered by the normal child in the same period of time. In order to do so, the work would have to be done superficially and nothing would be thoroughly learnt. Further, it is now generally agreed that for retarded children more time should be allotted to lessons of a less formal character.

(b) *Character.* More formal and abstract aspects of the various branches of the curriculum should not figure prominently in the work for retarded children. The topics dealt with in the lessons should be practical and concrete and book and paper work should be greatly reduced. Ordinary text-books are, as a rule, unsuitable for use with such children. A child of the age of nine or ten who is backward in reading needs words that are suited to an infant of the age of seven, but he will scorn the babyish style and content of the conventional infant primer. In the same way, the ordinary arithmetic books often contain too many difficult problems and not enough simple mechanical exercises to impress the fundamental rules on retarded pupils. In the best organised classes for retarded children, the teacher often, with the aid of his pupils, makes reading books and arithmetic tests of his own.

Most retarded children are visualisers, and understand by seeing and by doing. They learn reading and spelling best by the "look and say" or "word-whole" method, and are usually perplexed by a purely phonic approach. In general, their grasp of words, whether written, printed or spoken, is limited and weak. Hence, instruction of the lecture type is unsuitable for them; their written composition should be greatly reduced, and it is desirable that the classroom should be equipped with visual and manual aids of different kinds. The children should not merely be told about things, but should also see them. Above all, instead of being trained to sit still, they should be constantly active, on their feet, and with their hands. This implies that muscular movement should figure largely in the curriculum—handwork of different types, physical exercises, dancing, simple hobbies, and organised and unorganised games. Even the more formal branches of the curriculum should be taught through movement rather than through the unaided eye or ear, and the need for reading or arithmetic should arise naturally out of the difficulties or problems connected with manual and creative work. It must not, however, be assumed that handwork is in itself a panacea. It is certainly an easy way of keeping the retarded child occupied, concentrated or apparently concentrated on a definite task, with something to show for it at the end. Yet to exercise the hands is not necessarily to exercise the brain as a whole; and monotonous forms of handwork—such as knitting, plaiting, weaving, threading beads, and the like—which require little or no thought, may leave the child torpid or day-dreaming. Some innately dull children, too, are as inapt in manual work as they are in intellectual work. The actual type of handwork, therefore, should be carefully graded to suit the needs and capacities of each individual, and judiciously chosen and arranged so as to widen interest, stimulate thinking, and bear closely upon other work.

Above all, in every branch of the curriculum and at every stage the problems and the tasks that are put before the child should be well within his powers, and yet sufficient to evoke some mental effort. Instead of feeling that he is the dunce of his class, failing every day at whatever task he is given, he should experience the joy of successful work and the satisfaction of something achieved. If the product of the child's work is not only a visible well-finished job, but an embodiment of his own simple creative and aesthetic tastes, his character as well as his intelligence will be simultaneously trained.

Teaching Methods.

The old idea that intellectual exercises, however dull and incomprehensible, may nevertheless provide a wholesome mental gymnastic, has long ago been exploded and is least of all applicable to dull or backward children. The teacher will not improve the dull child's memory simply by keeping him memorising.(1) On the other hand, just because the dull child's memory is weak, he will undoubtedly need more "drill" in certain subjects; but this should be always drill on something that in itself is useful. One outstanding defect of the innately dull child is his lack of attention; the best way to awaken attention is to arouse interest. At every moment, therefore, the teacher should be appealing to the natural interests of the child. Forcing him to work at a task which he neither likes nor understands is worse than useless.

The dull child is as a rule singularly slow in talking in front of the class and the teacher. He has little to say, and does not know how to say it. In the past what he has ventured has seemed stupid to others, and he has thus grown shy and monosyllabic. Simple homely talks, story-telling, dramatic work and the like, might be freely used in the lower classes to draw the dull child out of his shell.

Individual guidance and attention will be almost indispensable. Retarded children differ far more amongst themselves than normal children. Hence explanations may often have to be elaborated for each particular child, and patiently repeated and illustrated again and again. Throughout he will need more personal assistance than would be necessary for the normal child. The teacher should be at once patient and enthusiastic. The discipline should be free. The strong points of each child should be known as well as the weak, and studied as avenues of approach. The most effective stimulus will be the child's own sense of progress.

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(1) See Chapter III, § 37, and Appendix III, p. 263.

APPENDIX I.

(A) LIST OF WITNESSES.

(i) Government Departments.

Board of Education.

Mr. J. A. Barrow, Assistant Inspector of Schools.
Mr. A. H. Cherrill, H.M. Inspector of Schools.
Mr. R. H. Crowley, M.D., Senior Medical Officer.
Miss S. E. Davies, H.M. Inspector of Schools.
Mr. G. P. Dunn, Assistant Inspector of Schools.
Miss D. M. Hammonds, H.M. Inspector of Schools.
Mr. G. E. Kendall, Architect to the Board of Education.
Mr. A. T. Kerslake, O.B.E., H.M. Inspector of Schools.
Miss N. M. Palmer, H.M. Inspector of Physical Exercises.
Sir Henry M. Richards, C.B., H.M. Senior Chief Inspector, and Chief Inspector of Public Elementary Schools.
Miss M. S. Ryan, H.M. Inspector of Schools.
Mr. W. K. Spencer, D.Sc., H.M. Inspector of Schools.

Welsh Department—

Mr. D. T Davies, H.M. Inspector of Schools.
Mr. J. Elias Jones, H.M. Inspector of Schools.
Mr. G. Prys Williams, Ph.D., H.M. Chief Inspector for Wales.

Scottish Education Department—

Mr. G. Andrew, H.M. Inspector of Schools in Scotland.

(ii) Associations representing Members and Officials of Local Education Authorities.

Association of Directors and Secretaries for Education :—

Mr. A. W. Allen, Secretary for Education for Hornsey.
Mr. G. H. Gater, C.M.G., D.S.O., Education Officer to the London County Council.
Mr. F. H. Toyne, Hon. Secretary of the Association, and Secretary for Education for Brighton.

Association of Education Committees :—

Mr. Ewart Smart, Secretary for Education for Acton.

Association of Municipal Corporations :—

Mr. W. J. Bees, Deputy Director of Education for Leeds.
Mr. A. H. Whipple, Director of Education for Nottingham.

County Councils Association :—

Mr. A. R. Clegg, Chairman of the Education Committee for Shropshire.
Mr. J. L. Holland, Secretary for Education for Northamptonshire.

Federation of Education Committees (Wales and Monmouthshire) :—

Mr. Bevan Evans, Director of Education for Flintshire.
Mr. Rhys Elias, Director of Education for Merthyr Tydfil.

National Association of Inspectors of Schools and Educational Organisers :—

Mr. L. Brooks, Divisional Inspector under the London County Council.
Mr. Haig Brown, Chief Inspector under the Surrey County Council.
Mr. G. C. Eley, Inspector of Schools under the Essex County Council.

(iii) Organisations representing Teachers.

London Association of Head Teachers of Central Schools :—

Miss Gordon, Head Teacher of the Southwark Central School for Girls.
Mr. H. Millward, Head Teacher of the Fleet Road Central School, Hampstead.
Mr. J. G. Robson, Head Teacher of the West Kensington Central School for Boys.

London Teachers Association :—

Mr. T. H. Jones, President of the Association.
Mr. C. J. Bool, Head Teacher of the Langford Road Junior Boys' School, Fulham.
Mrs. E. E. Livesey, Head Teacher of the "Alma" Junior Girls' School, Bermondsey.
Miss A. E. Phillip Lecturer at Avery Hill Training College.
Mr. W. J. Pincoms,be, Secretary to the Association.

National Association of Head Teachers :—

Mr. A. Saywell, President of the Association.
Mr. T. H. Gunn.
Mr. H. F. Lee.
Miss L. Low.

National Federation of Class Teachers :—

Mr. R. Morley, President of the Federation.
Mr. L. A. Grudgings, Vice-President of the Federation.

National Union of Teachers :—

Mr. F. Barraclough, Member of the Executive.
Mr. J. W. H. Brown, Member of the Executive.
Mrs. L. Manning, J.P., Member of the Executive.
Mr. G. S. M. Ellis, Secretary to the Education Committees of the Union.

National Union of Women Teachers :—

Miss A. A. Kenyon, President of the Union.
Miss E. E. Crosby, Chairman of the Educational Committee of the Union.
Miss C. Neal, Past President of the Union.
Miss E. E. Froud, General Secretary of the Union.

Training College Association and Council of Principals of Training Colleges :—

Mr. A. E. Dean, Warden of Goldsmiths' College.
Miss Hartle, Principal of Brighton Municipal Training College.
Miss May, Principal of Neville's Cross College.
Mr. T. Raymont, late Warden of Goldsmiths' College.

Union of Welsh Teachers :—

Miss Cassie Davies, Lecturer at Barry Training College.
Mr. J. Rees-Jones, Head Teacher of the Seven Sisters Boys' School, Neath.

(iv) Other Organisations.

The Education Commission appointed by Bradford Independent Labour Party :—

Mr. F. Betts.
Mr. W. Hyman.

Froebel Society and Junior Schools Association :—

Miss M. L. Haskell.
Miss E. E. Kenwrick.
Miss E. R. Murray.

Incorporated Preparatory Schools Association :—

Mr. R. G. Thornton, " Hill Brow," Eastbourne.
Mr. S. How, " Sunnydown," The Hogs Back, Guildford.

New Education Fellowship :—

Miss F. Burridge, Rothwell C.E. School, Yorks.
Mr. H. C. Dent, The Gateway School, Leicester.

Trades Union Congress General Council :—

Mr. Ivor H. Gwynne, J.P.
Alderman D. Hardaker.
Mr. A. S. Firth, Assistant Secretary to the Council.

(v) Individual Witnesses.

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Mr. P. B. Ballard, D.Litt., late Divisional Inspector under the London County Council.
Professor Cyril Burt, D.Sc., Psychologist to the London County Council.
Miss L. Chapman, Head Teacher of North Aston Junior School, Oxfordshire.
Miss E. Davies, Head Teacher of Elkstone C.E. School, Glos.
Miss E. Fitchett, Head Teacher of Balderton Council Junior School, Notts.
Mr. A. R. Florian, Head Master of the Priory Secondary School, Shrewsbury.
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Mr. T. G. James, Director of Education for Monmouthshire.
Mr. L. S. R. Jones, Head Teacher of Brize Norton Council School, Oxfordshire.
Mr. W. A. Knight, late Head Master of Sexey's School, Bruton, Somerset.
Mr. T. H. Kirkham, Head Teacher of Westhill Junior School, Torquay.
Mrs. L. Malcolm, Head Teacher of the C.E. Junior School for Girls, Dorchester, Dorset.
Sir Percy Nunn, D.Sc., LL.D., Principal of London Day Training College, and Professor of Education in the University of London.
Miss G. Owen, Hon. Secretary of the Nursery Schools Association.
Mrs. C. E. Pritchard, Head Teacher of Lubbesthorpe Infants' School, Leicestershire.
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Mr. W. E. Urwick, late H.M. Inspector of Secondary Schools.

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Mr. R. L. Ager, Head Master of Alderman Newton's Boys' School, Leicester.
Miss J. Aitken, Head Mistress of Reigate County School for Girls, Surrey.
Miss E. E. Allder, Head Teacher of Tudor Road Junior Mixed School, Southall, Mdx.
Miss V. Almond, Head Teacher of St. Barnabas' C.E. School, Sheffield.
Mr. F. E. Amos, Head Teacher of Badsey Mixed Council School, Worcs.
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Association of Assistant Mistresses in Secondary Schools—Joint Committee for Wales.
Association of Head Mistresses.
Association of Head Mistresses of Recognised Private Schools.
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Auto-Educational Institute.
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Miss C. M. Blatchford, Head Teacher of Bryndu Council Infants School, Glam.
Mr. R. W. Blenkinsop, Head Teacher of Morley Council School, Co. Durham.
Mrs. S. L. Bond, Head Teacher of Great Whelnetham School, Suffolk.
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Mr. D. C. G. Stileman, Head Master of Burford Grammar School, Oxfordshire.
Stirling, The Education Authority of the County of.
Mr. J. W. Stokoe, Head Teacher of Eggleston C.E. School, Co. Durham.
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Mr. B. Thomas, Head Teacher of Derwendeg Council Junior School, Glam.
Miss L. C. Thomas, Head Teacher of Oxford Street Junior and Infants' School, Barrow-in-Furness.

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Miss S. Thomas, Head Teacher of Lan Wood Girls' School, Pontypridd.
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Mr. C. J. R. Tipper, Director of Education for Westmorland.
Mr. C. H. Tipton, Head Teacher of Frampton Cotterell Council School, Glos.
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Warwickshire, The Education Committee for.
Miss E. Waterhouse, Lecturer at Homerton College, Cambridge.
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Miss M. J. Wellock, Head Teacher of the Medburn L.C.C. Infants School, N.W.1.
West Bromwich, The Education Committee for.
Westmorland, The Education Committee for.
Mr. C. Wheeler, Head Master of the Lower School of Lawrence Sheriff, Rugby.
Mr. J. Wicksteed, Head Master of King Alfred School, Manor Wood, N.W.11.
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Mr. H. G. Wills, Head Teacher of Paulerspury C.E. School, Northants.
Mr. G. H. Wiltshire, Head Teacher of Haddenham Council School, Bucks.
Miss H. E. Wix, late H.M. Inspector of Schools.
Women's Co-operative Guild.
Workers' Educational Association.
Miss M. Wye, Head Teacher of Bush Hill Park Junior Boys' School, Enfield, N.
Yorkshire (West Riding), the Education Committee for.
Miss L. E. Young, Head Teacher of Hersham Junior Mixed Council School, Surrey.

APPENDIX II.

MEMORANDUM ON THE ANATOMICAL AND PHYSIOLOGICAL CHARACTERISTICS AND DEVELOPMENT OF CHILDREN BETWEEN THE AGES OF 7+ AND 11+ BY MR. H. A. HARRIS, M.B., B.S., D.Sc., ASSISTANT PROFESSOR OF ANATOMY, UNIVERSITY COLLEGE, AND ASSISTANT TO THE MEDICAL UNIT, UNIVERSITY COLLEGE HOSPITAL, LONDON.

Contents.

INTRODUCTION.

It is a healthy sign of the times that the terms of inquiry for this Report refer to children from 7+ to 11+, ages which bear no relation to the quinquennial and decennial periods which obscure the significance of anatomical and physiological facts in the mass of our statistics. When Francis Bacon sketched his vision of the future development of science, he included among the major problems of physical science the analysis of the growth of the human body.* We are as yet, however, not within measurable approach of that science of embryology, the ultimate aim of which, according to William His, is the mathematical derivation of the adult from the distribution of growth in the germ.

Scammon(1)† has surveyed the work of the last three hundred years so as to indicate the extent to which the world has become a stage for children rather than adults. The total number of publications dealing with the growth of the child shows the increasing extent to which the child absorbs the working hours of the scientist. In the 16th century there was one publication, in the 17th century thirty publications, in the 18th century two hundred, in the 19th century two thousand five hundred, and in the first quarter of the 20th century, notwithstanding the Great War, three thousand five hundred. Of these publications 50 per cent. were in German, 20 per cent. in French and only 18 per cent. in the English language.

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* *Of the Advancement of Learning* (1605) *Works* (Ed. Ellis *and* Spedding) III, 374; *Catalogus historiarum particularium* (1620), *Works*, I. 407–408.

† See Bibliography, pages 249–51.

The valuable analysis of Scammon shows that the medical sciences have accounted for more than two-thirds, and journals dealing with psychology and education for less than one-thirtieth of the total number of publications. Further, if one considers publications dealing with the nervous system, three-quarters of the total publications have appeared in journals of medical science and but 0·5 per cent. in journals devoted to psychology and education. This statistical distribution is of interest as an indication of the continued interest of the medical scientist in the growth and development of the body and mind of the child as compared with the relatively recent interest of the workers in the limited fields of education and psychology.

The fundamental phenomenon of a healthy young animal is growth coupled with facility in the performance of work. The growing animal is able to absorb living or non-living organic matter, with a certain amount of inorganic matter, and to convert it into matter like unto itself, endowed with life. Growth is essentially a biochemical process of conversion. Health is a state of facile ability to perform work. All records of growth, whether they be obtained by the collective method of mass statistics with a view to ascertaining the norm, or by the individual and clinical method designed to give a particular child a chance in life, valuable as they may be, fail to yield an insight into the essential physico-chemical processes involved. The autonomous nature of the process is its chief virtue. The number of variables involved in the process of growth is at once the despair of and the stimulus to the biologist.

Growth in the animal is not synonymous with increase in bodily dimensions and weight, but involves an actual difference in the chemical composition of the tissues of the animal and in its behaviour. The animal grows into a larger animal, but simultaneously yet asynchronously develops into a different animal with a view to reproduction, senescence and finally, death.

The earlier studies of growth in children, based largely on measurements of height and weight at different ages, yielded in the hands of Quetelet[2] and Vierordt[3], a crude norm. Vierordt not only published weights of the body as a whole, but recorded the weights of the various organs, a procedure which was largely extended by Oppenheimer[4]. In recent years there have been numerous publications dealing with measurements of height and weight in children of various races. The value of the work is not commensurate with the number of measurements. The statistical evidence that can be wrung out of such measurements may have very little meaning because the quantities measured depend on such a multiplicity of causes. Statistical treatment may indicate that certain results are significant, but what they signify, is still unknown.

The simple study of the course of growth by the pictorial representation of certain " stages " was first employed by Fabricius of Acquapendente[5] (1621) and Blasius [6] (1692) for the " stages " of development in the chick. Albinus[7] and Soemmerring[8] illustrated stages of growth in the human foetus, Astley Cooper[9] of Guy's Hospital in the breast, and His[10] in human embryos. A notable advance in this pictorial method was made by Poland[11], a much neglected English surgeon, who first depicted the growth changes in the bones of the hands

by a series of radiograms. The radiographic method has the advantage of preserving a set of records which can be submitted to measurement and statistical analysis.

Modern methods of mathematical analysis of growth date from the time of Francis Galton[12], who introduced the conception of percentile notation and of correlation factors. This method of analysis in the hands of Pearson, Jackson, Pearl, Brownlee, Greenwood, Scammon and Dunn has produced a group of analytical expressions for growth which have the advantage of brevity and avoid the presentation of extensive tables and elaborate graphs.

From all the factors influencing growth, either hereditary on the one hand, or environmental on the other, as emphasised by Galton, the one significant factor which has emerged in recent times, is nutrition. The extent to which growth can be controlled by nutrition—a commonplace of the farmyard—has as yet been but poorly reflected in the diet of the growing child. Hopkins and Mellanby[13] in this country, Hess[14] and McCollum[15] and their co-workers in the United States of America by reason of their studies in the bio-chemistry of the vitamins, Corry Mann[16], Paton and Findlay[17] by reason of their study of environment and diet, have created a public conscience with regard to dietetics. This conscience is sadly abused by the interested manufacturer of patent foods.

The state of knowledge of the growth of the brain in relation to the growth of the body has been admirably summarised by Donaldson[18]. Since that time (1895) the anatomical work of Brodmann[19], Flechsig[20], Bolton[21] and Elliot Smith[22], and the physiological discoveries of Sherrington[23] and Pavlov[24] have led to a conception of growth and function in the brain far removed from that expressed by mere ponderal relationships.

Galton was the first to suggest the possibility of measuring human ability quantitatively. From this starting point have emerged tests of juvenile intelligence, such as the Binet-Simon tests, and of greater importance, that study of the gradual growth and emergence of behavioural patterns in the child which can be so closely related to definite stages in the growth of the skeleton and nervous system. The growing child, as emphasised by Coghill[25], is more than the sum of his reflexes, instincts and immediate reactions, since he also has his creative potential for the future. Lastly Spearman[26] and his co-workers have shown the innate character of mental powers and the comparative insignificance of that formal education which the State is able to impress upon the growing child.

The views expressed in the following sections are based on a close acquaintance with the growing child in the hospital, the home and the school. It is a pleasure to admit my indebtedness to Professor Donaldson of the Wistar Institute, Philadelphia, and to Professor Scammon of the University of Minnesota. To my colleagues at University College and University College Hospital my thanks are due, especially Professor Elliot Smith, F.R.S., Professor T. R. Elliott, F.R.S., and Dr. Barton, to whom the subject of "Growth" is "Anatomy writ large." For valuable assistance with clinical material, illustrations and radiograms I am indebted to Dr. Audrey Russell, Mr. A. K. Maxwell and Mr. F. Melville respectively.

THE GROWTH CURVE.

The foetus in the month before birth grows more rapidly than at any other period. During this month the infant increases his weight by 1 per cent. each and every day. If he continued to grow at this rate after birth, he would weigh 200 lb. at the end of the first year and at the end of 20 years would be as big as the earth. During the first year of postnatal life the babe grows rapidly and this period may be called the *first springing-up* period (Fig. I). From one to five years he grows more slowly and more steadily. This is the *first filling-out* period. From five to seven years there is a *second springing-up* period. It is at this stage that the child increases rapidly in height, loses his milk dentition, and begins to cut his second or permanent teeth, becomes thin and long in the leg and exchanges the chubbiness of babyhood for the characteristic family countenance. At seven years of age his head is almost as large as it ever will be. Between seven and eleven or twelve, according to sex, occurs the *second filling-out* period with steady growth as its characteristic, to be followed by the *third springing-up* period associated with puberty. The startling changes associated with the rapid growth of puberty give place to the *third and last filling-out* period, as puberty gives place to the period of adolescence.

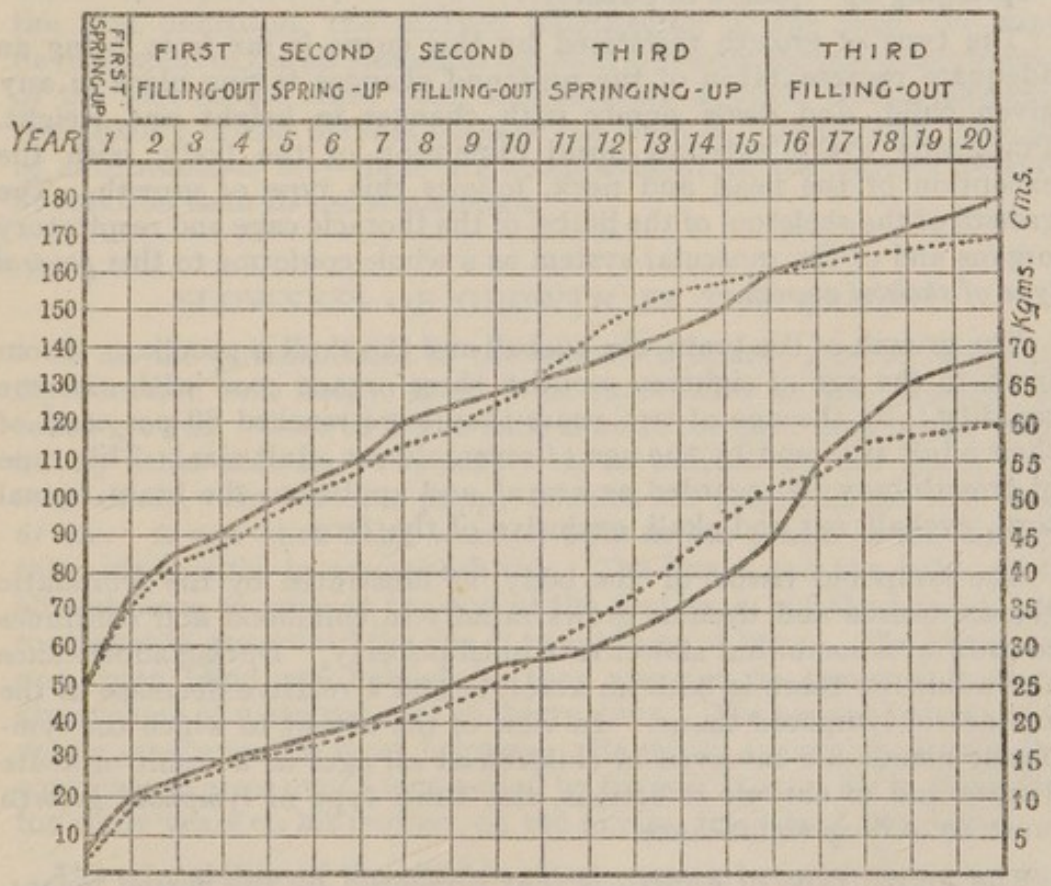

FIG. I.—The growth curve for height (cms.) and weight (kgms.) in the child to show the three "springing-up" periods followed by three "filling-out" periods.

Boys: ——— continuous line.
Girls: ..... dotted line.

(After Stratz: *Der Körper des Kindes und Seine Pflege. Stuttgart*, 1922).

Thus each "*springing-up*" period is followed by a "*filling-out*" period. Each "springing-up" period has its own peculiar problems and to a lesser extent each "filling-out" period has its peculiarities. All these periods are apt to be upset by oscillations of growth, and may be modified by diet, environmental conditions, and disease. The first "springing-up" period presents the dangers of certain nutritional diseases such as rickets, scurvy, infantile diarrhoea and digestive disturbances. The second "springing-up" period from five to seven years and the first "filling-out" period immediately preceding it are peculiarly associated with the acute infections and fevers of childhood such as whooping-cough, measles, chicken-pox and diphtheria. The second "filling-out" period from seven to eleven or twelve is the period during which the child presents in varying degree the *sequelae* of these acute infections. The problems presented during this interval concern themselves predominantly with the heritage of the diseases and deficiencies of the preceding years. In particular, dentition, defective vision, enlarged tonsils and adenoids, middle-ear disease, and disease of the lymphatic glands in the chest, neck and abdomen call for urgent attention. This period of consolidation from the age of 7 to that of 11 may be regarded at one and the same time as the opportunity for retrieving past errors of development and for preparing for the heavy demands necessitated by rapid growth during the third "springing-up" period of puberty.

The type of growth registered by this curve is far from being an adequate representaton of the profound changes taking place in any given child, and deals purely with changes in height and weight. Practically every external lineal dimension of the body, with the exception of the head and neck, follows this type of growth. The growth of the skeleton, of the limbs, of the thoracic cage and respiratory organs and of the muscular system as a whole conforms to this *general type of skeletal growth.*

The growth of the brain, the eyeball and the skull is peculiar. From birth to the age of eighteen months, these organs grow with extreme rapidity; by the age of two years they have reached 60 per cent. of their adult size, and by the age of seven almost adult size. This type of growth may be regarded as *neural*, and applies to the brain, spinal cord, eyeball, ear and skull, exclusive of the face.

The lymphoid tissue of the body, as illustrated by the lymphatic glands, tonsils and thymus grows rapidly in childhood and continues to grow at a somewhat slower rate until puberty. During adolescence and adult life there is both an absolute and a relative decrease in the amount of lymphoid tissue. In view of the extent to which the lymphatic glands are involved in children at all ages as a result of acute disease and of chronic infections, this third type of *lymphoid* growth must be of deep significance.

The fourth type of growth is that presented by the *genital organs*. These organs grow but slowly in infancy, remain almost stationary from two to ten, and grow rapidly in the two years before puberty, during puberty, and during adolescence.

Scammon ([27]) lays emphasis on the fact that these four types of growth, general or skeletal, nervous, lymphoid and genital are but crude representations of the complexity of the processes involved.

Dentition is not completed until about the 21st year when the " wisdom" teeth erupt. Growth in the face and neck continues to the same age. The suprarenal glands, the paired organs which lie in relation to the kidneys, lose one half of their weight in the first two weeks of post-natal life, increase slowly up to the fifth year, and do not reach birth weight until puberty. The uterus, which grows rapidly in the last month of ante natal life, loses 50 per cent. of its weight in the first two weeks of post-natal life and does not begin to grow appreciably until two or three years before the onset of menstruation.

The ductless glands, or glands of the endocrine system, which have provided so many astounding experimental observations and so much feeble theorising, present a picture which defies analysis. The thyroid gland displays steady growth from birth to maturity, with the tendency to enlargement in relation to puberty and pregnancy as a characteristic. The thymus follows the lymphoid type of growth. The pineal follows the nervous type, and the pituitary follows the thyroid. There is thus no trace of correlation in the growth pattern of the ductless glands.

It should be mentioned that the second " springing-up " period of growth between five and seven years is not so clearly shown on some of the growth curves of height and weight as it is made manifest to the careful observer of young children. The cutting of the second dentition, often accompanied by nervous disturbances as significant as those of the first dentition, the marked lengthening of the face, the rapid development of the air sinuses in the face, and even the rapid lengthening of the foot in the sixth year, necessitating a larger size in footwear, the anxiety of the parents because the child is " going thin," the loss of subcutaneous fat—these are more evident to the careful observer of children than to the statistician.

SLOWNESS OF GROWTH IN THE CHILD.

Of all the potentialities of the new-born infant, growth, maturity, reproduction and decay, none is so marvellous as the phenomenon called growth. Growth in the babe is more complex than in the young of any other animal. *The baby is of all animals the one which grows most slowly.* An Airedale puppy doubles his weight in the first week of life. A new-born babe, whether born in the palace or the cottage, takes six months to accomplish this. The kitten and the baby rabbit almost cease to grow at the end of the first year, but the human babe continues to grow until the age of twenty-one or later. The kitten and pup, born blind and helpless as they are, can be removed from the atmosphere of maternal care at thirty days. The human babe is of all young creatures the most helpless. He grows extremely slowly, but continues to grow over a long period by fits and starts. He is dependent for many years on his mother, on the family, the school, the State.

The educability of the child is closely associated with this slow rate of growth. Animals such as the lamb, calf and colt, which run about as soon as they are born, cannot learn new methods of thinking with the same facility as the helpless pup, kitten or bear-cub. They have scampered through their childhood at too great a pace. The new-born guinea pig presents the same degree of ossification in the bones of the hind limb and the same relative ponderal development of the brain as the child of eight years. The guinea pig has, so to speak, wasted eight

years of life *in utero* in an environment limited by such *stimuli* as could penetrate the amniotic fluid. He has lost those eight years of education in an outside world with new *stimuli*, new experiences, new responses which are given to the human child. Both the guinea pig and the pig are able to walk, to run and to fend for themselves to a considerable extent at birth. But such development is bought at a price and is reflected in the low degree of educability which they present, and in their limited range of what might be called intellectual impulse. On the other hand, the kitten, pup and rat are born in a distinctly immature condition. The rat at birth presents the same degree of ossification in the hind limb and the same degree of ponderal development of the brain as the human *foetus* of the fourth month of pregnancy. The kitten and the pup are born at a time when the ossification pattern of the hind limb and the ponderal development of the brain correspond to that of a human *foetus* of the seventh month. They, blind and helpless, unlike the pig, calf, colt and guinea pig, may look forward to a comparatively long period of childhood and educability, during which new behaviour patterns can be acquired. Yet, in such forms as the kitten, and pup, the period of effective childhood is relatively short, since they pass from the stage of the suckling through the stages of primary and secondary dentition to adolescence and sexual maturity within one year. The characteristic of man is the slowness of growth and the postponement of sexual maturity. The race is not to the swift, but to the simple. This has been emphasised by Bolk ([28]) and Elliot Smith ([29]) as the anatomical persistence of foetal and childish characters. Precocity of development and specialisation is bought only at the price of diminished final attainment.

The comparative state of development of the skeleton and brain at birth in different species is paralleled in mild degree by those differences observed in man and woman. Centres of ossification in relation to developing bone appear earlier in the girl baby than in the boy. Moreover, epiphysial union, and that knitting of the bones which heralds cessation of growth in length at the end of adolescence, occur earlier in the female. Energetic champions of the anatomical virtues of women have repeatedly pointed out that the female brain, as well as the skeletal development, is remarkably precocious. The brain weight in a girl of ten is four times that of the brain weight at birth, but in the boy the brain weight is not quadrupled until the age of 14. On the other hand growth of the brain persists in man for a longer period than in woman. It would appear that the precocity of the female, both as regards brain growth and ossification, is an indication of the earlier acquisition of a common behaviour pattern and of a more readily exhausted intellectual impulse. This problem has its repercussion on the problem of co-education, since the differences between the sexes which are so often regarded as commencing at puberty are far more profound and are at work from the early stages of embryonic life. The girl of twelve is taller and heavier than the boy of the same age. Her skeleton is nearer maturity, her brain is nearer maturity. The sexual differences are as complicated at ten years of age as at fourteen, except for the absence of such a dramatic event as the onset of menstruation in the girl.

Growth even in the period between the ages of 7 and 11 has to be interpreted in the boy and girl, as everywhere else in the biological world, in terms of the antagonistic factors of vegetative reproduction or

proliferative growth proper, and differentiation for specialised function, sexual or otherwise. The significance of slowness of growth in the child is admirably expressed in the adage : apples which ripen most slowly, last longest.

EVIDENCE OF ARRESTED GROWTH IN CHILDREN.

The one thing which has emerged from my own observations[30] at University College Hospital, has been the inordinate extent to which the growth of the skeleton is sensitive to relatively slight and transient illnesses and periods of malnutrition. Every acute illness, whether it be due to an acute fever or to disease of the respiratory system such as broncho-pneumonia, upsets the normal metabolism and growth of the child. Such illnesses are recorded on the bone as " lines of arrested growth." (Fig. II). The radiological and histological structure of these

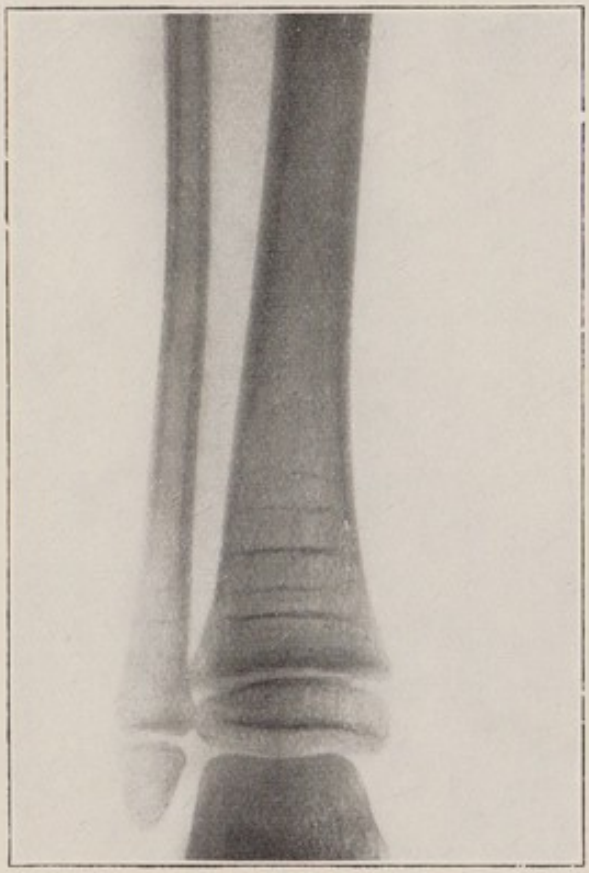

FIG. II.—Radiogram of the ankle of a girl of 6 years. The lines of arrested growth due to successive illnesses, measles, whooping cough and several attacks of broncho-pneumonia, from $1\frac{4}{12}$ to 6 years are seen in the tibia.

lines of arrested growth shows that they are due to a defensive mechanism in the bone. When the child is ill or starved, the epiphysial growth cartilage at the end of the shaft of the long bones ceases to proliferate, and becomes heavily calcified. When growth is resumed, after the removal of the nociceptive stimulus, this line of arrested growth appears as a veritable scar on the bone. Such lines of arrested growth differ in extent, but not in genesis from the lines of complete cessation of growth which appear as a result of the final calcification of the epiphysial

growth cartilage on the completion of adolescence. These lines of arrested growth in bone following acute illness or starvation may be compared with the permanent transverse ridges in the enamel of the permanent teeth, with the transient ridges running transversely across the nails, with the annual rings on the scales of fish, or the seasonal rings in deciduous trees.

These lines of arrested growth have not only been studied in the acute fevers of childhood but also in metabolic diseases such as diabetes. (Fig. III). The young victim of this pernicious disease displays a series

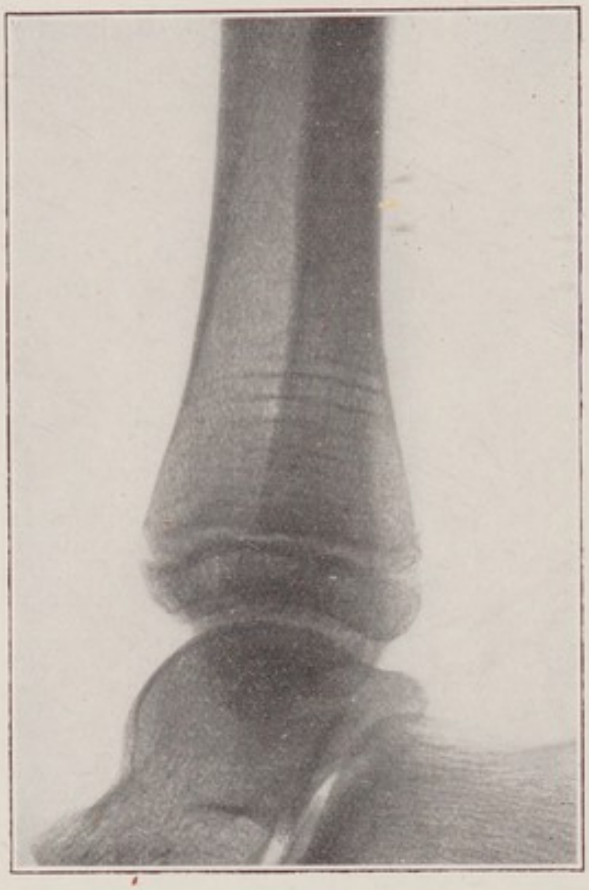

FIG. III.—Radiogram of the ankle in a girl of 12 years. The tibia shows successive lines of arrested growth due to relapses in diabetes during the previous three years.

of lines of arrested growth indicative of the extent to which growth is controlled by the administration of insulin, and acute exacerbations of the condition are faithfully recorded.

This indication of the extent to which illness is registered as a veritable scar in bone, is emphasised in order that we may realise how sensitive the growing child is to illness or starvation. We know but little of the extent to which illness involves the growth and development of those organs which display the neural, lymphoid or genital type of growth. The involvement of the skeletal system, as demonstrated by the lines of arrested growth, is far greater than was anticipated. The muscular system and fat deposits of the body, it is true, had always been associated with rapid wasting in illness and starvation. When we realise the extent to which the various organs of the body, especially the blood-forming

organs in the marrow and spleen, may be involved in illness or malnutrition, it becomes apparent how grave is the responsibility assumed by those who wish " to make the children work," or to curtail the period of convalescence. There is little doubt that an equally intensive study of the organs and tissues other than bone would indicate the extent to which acute illness and starvation are registered upon them.

DISEASES IN RELATION TO THE CURVE OF SKELETAL GROWTH.

I have been interested for some years in plotting the incidence of various acute and chronic diseases on the growth curve. There is evidence that the three " springing-up " periods are peculiarly associated with certain diseases. Moreover, any disease which might appear at any year of school age shows a tendency to leave more severe *sequelae*, if it occurs during one of the " springing-up " periods when the child is already taxed to the utmost in providing the necessary energy for growth.

Two of the most studied chronic infections illustrate this. Congenital syphilis, if it fails to manifest itself in the first year of life, tends to appear during the second dentition or during puberty, the stress falling essentially on the teeth, the joints or the eyes. Tuberculosis is invariably fatal in the first year and assumes the widely disseminated miliary form, with or without tubercular meningitis. During the second " springing-up " period, the acute fevers involving the respiratory tract, especially measles and whooping cough, are often followed by tubercular involvement of the glands of the chest. Running ears and nephritis as *sequelae* of scarlet fever at this age are well known. One might say that the age from 7+ to 11+ is of peculiar interest in the hospital clinic by reason of the relative rarity of acute disease, and the relative frequency of the chronic *sequelae* of the preceding acute infections. The burden tends to fall most heavily on the lymphatic system in the neck, chest and abdomen. In those districts where the milk supply is inadequately guarded, tuberculosis of the bones and joints is also common.

The third " springing-up " period of puberty presents the familiar picture of the boy or girl outgrowing his or her strength, with a tendency to the reappearance of severe *sequelae* to acute infections, and a predisposition to disabling manifestations of the chronic infections. The peak incidence of enteric fever occurs in this period, and critical complications tend to be seen at an earlier age in girls than in boys in accord with the earlier onset of puberty.

As long as the school leaving age stands at 14 or 15 years of age, the State has to regard the period from 7+ to 11+ as the last opportunity for retrieving the errors of the past and consolidating young children for the strain of puberty. With a school leaving age of eighteen there would be a final opportunity at the end of puberty and during adolescence of retrieving to no mean extent the errors and scars of childhood and of providing for a healthy period of adult life. After the completion of adolescence there is but scant opportunity to convert a C3 population into an A1 population. It thus becomes all the more imperative in view of the existing school leaving age that the years from 7 to 11

should be recognised as the last available opportunity for raising the norm of physical efficiency, for eradicating the errors of early childhood and for preparing for the severe burdens of puberty.

The statistics of the incidence of disease and death which are now rendered in quinquennial and decennial periods, should be plotted as yearly returns on the growth curve so that the distribution of disease may be related to the underlying anatomical facts of growth and development. If the perversions of growth such as rickets, coeliac rickets, renal rickets and adolescent rickets be plotted on the growth curve in terms of age distribution, the trimodal curve corresponds very closely to the three "springing-up" periods. Measles, whooping cough, scarlet fever, diphtheria, chicken pox and infantile palsy are acute infections which characterise early childhood. Further, the complications of these diseases tend to be more marked, if the onset of the disease falls within the first or second "springing-up" periods. The troublesome *sequelae* are more severe, if the disease falls upon the child when he is faced with a period of rapid growth. The peak of incidence in scarlet fever falls in the sixth year. The mean incidence of the septic form is in the seventh year. The severe complications, other than otitis, such as adenitis, nephritis and endocarditis also fall in the second "springing-up" period. In the case of diphtheria the peak of incidence is in the fifth year. The age incidence of the complications shows that apart from otitis, which is always most severe in young babies who can make no vigorous expiratory effort, the albuminuria reaches a maximum in the seventh year. Diphtheritic palsy is usually somewhat later, in the ninth year. Of all cases of scarlet fever and diphtheria occurring from birth to sixteen years of age, approximately 70 per cent. of the cases of scarlet fever and 80 per cent. of those of diphtheria fall within the age group of 0–8. In cases of acute fevers occurring after eight years of age the incidence of complications decreases rapidly. This is a strong argument in favour of seven (7+) or even eight years as the age of transference from the infants' department to the upper section of the primary school. The recent report by Goodall, Greenwood and Russell ([31]) confirms this point of view.

GROWTH IN ANIMALS AND PLANTS.

The differences between growth in animals and plants have been discussed since the time of Aristotle and Theophrastus* and since some educationists have clearer views upon growth in plants than upon growth in children, it may be wise to consider some of these differences. The plant continues throughout life to form new organs, whereas the animal concentrates or telescopes the process of organogeny into the first part of embryonic life. All the essential organs in man are laid down before the end of the fourth month and the primordia are clearly demarcated by the seventh week of embryonic life. The plant regulates its growth by its leaf area, the photosynthesis being a function of leaf surface. The animal does not grow in response to so simple a factor as increase in surface area. The plant always retains at the growing point embryonic tissue, rapidly growing and peculiarly susceptible to injurious *stimuli* such as cold winds or frost. This

* Aristotle, *De Generatione Animalium* I.1., p. 715b, 21 foll, Berlin Ed., 1831.
Theophrastus, *Historia Plantarum*, I.1., §§ 1–5.

persistence of embryonic tissue allows the plant to grow new organs throughout life. There is nothing strictly comparable to the growing point of the plant in the animal, in which powers of regeneration and repair are so strictly limited in accord with the position of the animal in the evolutionary scale. No new nerve cells can be grown and nerve cells once destroyed are never replaced after birth. Lastly the plant is largely the plaything of its environment, whereas the animal, particularly the warm-blooded animal, can rise, within limits, superior to its environment.

Almost all our knowledge of growth in plants has been expressed in terms of size ; almost all our knowledge of growth in animals has been expressed in terms of weight. Plants can be measured with ease, but can only be weighed with difficulty. Animals can be weighed with ease, but measured with difficulty. Changes in the chemical composition of plants have been studied in detail, but studies in the chemical composition of animals have been comparatively few. There has been no satisfactory analysis—organ by organ and tissue by tissue—of the changes in composition of the animal. Moulton ([32]) is the sole pioneer in this field.

The graphic method of tabulating weights and heights so dear to the physical anthropologist is apt to lead to the assumption that the growth rates of the different organs and tissues do not differ greatly among themselves. There is no reason for regarding the growth curve as the resultant of a series of components that differ but slightly from one another. Growth in the animal is not uniformly distributed through all the tissues at a given time, nor is it accomplished by cell multiplication as distinct from increase in size of the cell.

The skin, muscles, skeleton and *viscera* grow at different rates at different ages. The rapid growth of the muscular system in the last month of antenatal life and again in puberty illustrates this fact. Actual muscle forms but 25 per cent. of the body weight in the new-born, whereas in the young adult it forms 43 per cent. Different tissues and different organs cease growing at different ages, and relatively inert tissues such as fat, undergo great variation in response to changes in diet and exercise. The important characteristic in the growth of the animal is the substitution of mere proliferative growth in the cell by special function in the cell. The nerve cell does not proliferate in postnatal life and is designed to carry out its special function for three score years and ten. Similarly the cells of the sweat and salivary glands function as working cells without any appreciable degree of proliferation. A scar in the skin never grows hair follicles or sweat glands and so is never completely regenerated skin. The athlete in training does not grow new muscle cells ; he simply increases the size of the cells. This point of view must be grasped both because curves of height and weight yield but meagre information and because growth involves two wholly distinct and mutually exclusive processes : (1) mere proliferation of pre-existing cells and, (2) differentiation of the cell, involving the surrender of proliferation, for special function. Richard Owen, Curator of the Royal College of Surgeons, said, as far back as 1843 :—

" Organic form results from the antagonistic working of two principles, of which one brings about a vegetative repetition of structure, while the other, a teleological principle, shapes the living thing to its

functions. . . . In every species these two forces are at work, and the extent to which the general polarising or ' vegetative repetition ' force is subdued by the teleological, is an index of the grade of the species."

The inherent complexity of growth and development, far greater than that indicated by Scammon's four types of growth described in an earlier section as skeletal, nervous, lymphoid and genital, must be borne in mind when the data of the physical anthropologist are presented. All efforts to subject the growth curve to mathematical analysis have failed. All attempts to give the growth curve a chemical interpretation in terms of autocatalytic reactions have failed. Our knowledge of growth, proliferation, differentiation, decay and death in the cell is inadequate. The limitations of the physical anthropologist, no less than the limitations of the vocational psychologist, are apt to be submerged. Each child in himself is a new biological experiment, and is after all essentially but a potential producer of a progeny of new experiments in biology.

Plants have no work to do besides nutrition, growth and reproduction. All animals possess, in addition, sensation and the sensitive or perceptive soul. Aristotle[34] wrote :—

" Plants, again, in as much as they are without locomotion, present no great variety in their heterogeneous parts. For, where the functions are but few, few also are the organs required to effect them. . . . Animals, however, that not only live but feel, present a greater multiformity of parts, and this diversity is greater in some animals than in others, being most varied in those to whose share has fallen not mere life, but life of high degree. Now such an animal is man."

It was also Aristotle who said of animals :—

" Their manner of life differs in their having pleasure in sexual intercourse, in their mode of parturition and rearing their young."

This presents baldly a fact which we cannot afford to dismiss from our scheme of education.

The first attempt to interpret the course of human growth on a chemical basis was made in the same year by W. Ostwald and that brilliant Australian, the late T. Brailsford Robertson[35]. Robertson concluded that there are three maxima in the curve of growth, and constructed his so-called " autocatalytic curve." Davenport[36], who has contributed numerous important papers on the subject of human growth, insists that there are but two periods of accelerated growth, the one circumnatal and the other adolescent. Davenport's curve of growth shows but two growth accelerations superimposed on a residual curve of growth out of which the accelerations arrive. The residual curve is characterised by a low velocity, averaging about 4½ lb. per year from two to twelve years. No period of acceleration between the fourth and seventh years is recognised.

In the discussion of the growth curve in the child we have adhered to the curve which presents three " springing-up " periods, mainly because of its clinical value in the study of the individual child, partly by reason of its emphasis in the curves given by Pfuhl[37] and because of its general acceptance by Brownlee[38]. Moreover the growth curve based on mass statistics tends to be smoothed out by mutual cancelling of the growth of children above and below the norm.

Donaldson[39] and Scammon have insisted on the different types of growth in various organs and tissues at different periods of the life cycle. The growth rate at a given instant in a child as a whole is the resultant of a considerable number of different growth rates. Each one of these rates is probably susceptible in a varying degree to injurious *stimuli* such as disease and malnutrition. Each one of these rates of growth probably presents a different rate of re-establishment on the removal of the injurious *stimuli*. Thus little remains of the conception that growth as a whole, as indicated by van de Sande-Bakhuyzen and Alsberg[40], is controlled by a single master reaction.

THE GROWTH OF THE NERVOUS SYSTEM IN THE CHILD.

Numerous attempts have been made to express in the form of an index the relative proportions of brain and body in various animals during the different stages of growth. Cuvier[41] more than a hundred years ago published a comparative table of the ratio of brain weight to body weight. This ratio alone is obviously an inadequate expression of psychological differences. The fact that the body weight of the mouse is thirty times that of the brain weight. whereas the body weight of man is forty times that of the brain weight is enough to indicate this. Brandt[42] emphasised the significance of surface area rather than body weight in small mammals. But even if the brain weight of small animals be assessed in terms of their relatively large surface area, it still remains relatively great because it is associated with a high metabolic rate and great muscular activity. Manouvrier[43] suggested that brain weight could be analysed into two factors, one of which represented the weight of brain substance (i) devoted to the exercise of intelligence, and the other the weight (m) subserving the functions of the body. Thus the brain weight $= i + m$. Lapicque[44] indicated that the latter factor (m) is really concerned in particular with the actively innervated part of the body as distinct from inert deposits of tissues such as fat; and he accordingly modified the formula so that the brain weight equals $i + km$ where k is a constant for the species.

Keith[45] designated that part of the brain which is present by virtue of the mass of the body as the "corporeal concomitant," and indicated that it decreases with increase in body weight of the animal, so that for the whale or the elephant the corporeal concomitant reaches a minimum. Broca[46] had sought a similar expression for man when he stated that each addition of 10 cms. to the stature yielded a corresponding addition of 5 gms. to the weight of the brain. Marshall,[47] basing his results on the data of Boyd, calculated that 10 cms. of stature accounted for an increase in brain weight of 2·4 gms.

Richet[48], in order to avoid the errors due to the relatively inert portions of the body, compared brain weight with the weight of the liver. This method is open to objection, as the relative weight of the liver varies markedly with age and the deposit of fat therein is remarkably inconstant. Manouvrier accordingly compared brain weight with the weight of the fresh *femur*, and found a closer degree of constancy within any given species. Dubois[49], working with closely related species, postulated an empirical formula $\frac{E}{E^1} = \left(\frac{S}{S^1}\right)^p$ where E and E^1 are brain

weights and S and S^1 are body weights and p is an index to be determined. Dubois found that p ranged from 0·54 to 0·58 with a mean value of 0·56. This leads to the formula of Dubois :—

$$\text{Brain weight (E)} = K \times S^p$$

where $p = 0{\cdot}56$ is the *exposant de relation* and K is the *coefficient de céphalisation*.

Scammon and Dunn[50], dealing exclusively with postnatal brains in a series of 3,000 autopsies, obtained a formula of the general type :—

$$Y = \frac{x + c}{a + bx} \text{ and } Y = \frac{x + 0{\cdot}315}{0{\cdot}09 + 0{\cdot}0692\,x}$$

where 100Y = brain weight in grammes, x = age in years, and a, b and c are empirical constants.

Recently Anthony and Coupin[51], instead of regarding brain weight as a function of the approximate square root of the body weight as found by Dubois, or of the approximate cube of a function of length as found by Scammon and Dunn, have envisaged brain weight as a function of the fourth root of the body weight and have established a new formula :— $PE^1 = PS^p \times K$

where PE^1 = calculated brain weight
PS = body weight
p = 0·25 = coefficient
and K = constant for the species.

This empirical formula yields the calculated brain weight of a reduced image of the adult of the species, i.e. the brain weight of the adult of the species if the said adult were reduced to the size of the young individual considered. Thus if PE = actual brain weight of the young individual, PE^1 = calculated brain weight of the reduced image of the adult (reduced to the same body weight as the young individual).

$$\text{then } \frac{PE}{PE^1} = \frac{\text{actual brain weight}}{\text{calculated brain weight.}} = \text{Index of Cerebral Value.}$$

Thus in the case of a boy of seven years of age, with a body weight of about one third of his father's, the calculated brain weight if he were a reduced image of his father would be 1,000 grams. Actually the brain weight of the body is 1,250 grams. Thus the Index of Cerebral Value for the boy is 1·25, and the weight of the brain is one quarter more than the brain weight of the reduced image of the father. Anthony and Coupin claim that the Index of Cerebral Value gives a definite picture of the urge (la poussée) of brain growth. In the human embryo the index increases from 0·13 at the fifth month to 0·60 at birth. The index reaches 1·0 at the age of one year, and increases to a maximum of about 1·27 at seven years of age. A progressively slower decrease is seen from seven and the index returns to unity at about 30 years of age.

This index of Anthony and Coupin is useful as it indicates the ages at which the child has a brain which is relatively large. The index is at a maximum about the seventh year. The sixth and seventh year corresponding to the second " springing-up " period of skeletal growth are thus seen to be very important years from the point of view of brain growth. Many educationists, particularly those working in intimate

contact with abnormal children, have described marked transitions in mental growth at 5½ or 6 years of age. Froebel and Montessori have emphasised this marked change in mental activity at this age.

In searching for some relationship between the rapid brain growth of the sixth and seventh years and the rapid skeletal growth of the same period I have stumbled upon a relationship which may be of some significance in comparative psychology and in education([52]). I have taken X-ray pictures of a large number of new-born animals and from the weight of the body and the brain have calculated the Index of Cerebral Value. There is a definite relationship between the ossification pattern and development of the hind-limb on the one hand and the growth of the brain on the other. The new-born rat has a ponderal brain development and an ossification pattern in the hind-limb comparable to that of the human embryo of the fourth month. This rat, born blind, helpless and hairless is, both as regards brain growth and skeletal growth, at the stage of the nonviable human embryo of the fourth month. The new-born pup, presenting many features in common with a prematurely born human foetus has both a brain development and a skeletal development comparable to that of the human foetus of 26 weeks gestation, i.e. a premature babe of the seventh month. The new-born pig and guinea-pig on the other hand, born in a state of great activity, running about and able to fend for themselves to a considerable extent, are born with a hind-limb presenting the same stage of ossification as that of a boy of seven or eight years of age, and also the ponderal brain development of a boy of seven or eight. Thus the young of these forms whilst they are still in the mother's womb are already relatively grown up and have hurried through those phases of development which occupy early childhood in the human babe.

The precocity of the animals such as the pig, guinea-pig, lamb, calf and colt, which are able in large manner to fend for themselves at birth is bought at the price of diminished final attainment. The new-born pig has spent the equivalent of seven years on the human scale in a sphere of amniotic fluid where new experiences are rare. The new-born babe in the first seven years of postnatal life is subjected to a change of environment, to a variety of stimuli, to an excessive maternal care : and this results in a corresponding variety of responses. The brain of the pig ceases to grow, like that of the calf, at the end of six months. The brains of the cat and dog ceased to grow at one year, when the animals reach sexual maturity. The continued susceptibility of such forms as the dog and the pig to formal education is widely different. The latter is too old at birth to learn much : the former can look forward to a period of educability. The marked difference in the behaviour patterns of animals, the extent to which they can learn new methods of thinking and the limits of formal education are thus seen to be related not only to the ponderal development of the brain but also to the state of skeletal development at birth.

According to the differences enumerated above for various species it might be argued that the rat, kitten and pup should by reason of their immaturity at birth look forward to a further final attainment than the human babe. The sexual development of these forms compared to the human is early. Thus the rat ovulates at seventy days, and the dog and cat are sexually mature at one year. In man alone has the

skeletal growth curve been broken up into a succession of "springing-up" periods and "filling-out" periods. In man alone has sexual development been postponed to a relatively late age. The important years for education are the years preceding sexual maturity.

The differences in skeletal and brain development between the species may be studied also within the species. Skeletal development varies markedly with sex and race. The study of essential differences in the brain of man and woman have led to no important sexual distinctions. As Havelock Ellis (53) says:—"The history of opinion regarding cerebral sexual difference forms a painful page in scientific annals. It is full of prejudices, assumptions, fallacies, overhasty generalisations. The unscientific have had a predilection for this subject: and men of science seem to have lost the scientific spirit when they approached the study of its seat. Many a reputation has been lost in these soft and sinuous convolutions." The development of the skeleton in the girl as compared with the boy is precocious. The centres of ossification of the bones appear days earlier in foetal life, weeks earlier in babyhood and from one to two years earlier in childhood and puberty. (Figs. IV and V.) The bones of the skeleton are knitted together earlier in the girl, in conformity with the earlier onset of puberty and the earlier appearance of cessation of growth. The growth of the brain in the girl is also precocious as compared with that of the boy, so that in the girl the brain weight is quadrupled before ten years of age, whereas in the boy the brain weight at birth is not quadrupled until fourteen years of age. Thus quite apart from the usual conception of secondary sexual characters, there is a close relationship between the skeletal characters as demonstrated radiographically and the development of the brain.

SECONDARY CENTRE FOR OS CALCIS.

FIG. IV.—Radiogram of the heel of a girl of 6 years showing the *precocious* appearance of the secondary centre of ossification in the os calcis.

SECONDARY CENTRE FOR OS CALCIS.

FIG. V.—Radiogram of the heel of a boy of 10 years showing the *late* appearance of the secondary centre of ossification in the os calcis.

In the same manner as boys and girls of a given race show these differences in rate of skeletal development and brain growth, so different races display wide differences. Certain races mature early both from the point of view of brain growth and from the point of view of skeletal growth. Long before the dramatic appearance of menstruation these processes of maturity have been progressing in these two systems within the organism, and the rate of progress is a racial feature. The diminished final attainment and the limit of educability in the primitive races is thus more than a matter of sex. There are evidences that even amongst a relatively unmixed population of one social class the differences in growth of the skeletal and nervous systems, quite apart from sex are sufficiently marked to indicate a true familial or diathetic character. The revolutionary experimental work of Smith and Engle[54] must be mentioned in this connection. By injecting extract of the anterior lobe of the pituitary gland into various laboratory animals they have been able to hasten the process of sexual maturity to a marked degree, so that the time necessary to reach puberty has been reduced by one third. The converse experiment whereby puberty from the sex point of view is delayed by a corresponding margin of time is not yet possible. The results of this artificially induced sexual maturity on the educability of the animal opens up a new experimental approach to the problem of behaviour, and to the genesis of those mental characters which have always been associated with the races in which sexual maturity is relatively late.

Our conceptions of the age of 7+ to 11+ as a neutral age, a conception formed by some educational administrators, has thus to be surrendered. The boy is a boy from the earliest weeks of embryonic life and the girl is essentially feminine from the same time. Throughout childhood the development of the skeletal system, the nervous system

and the endocrine system in the two sexes is distinct, and the development of the behaviour pattern is distinct. Co-education during these early ages may be justified if it is advocated on account of the benefits

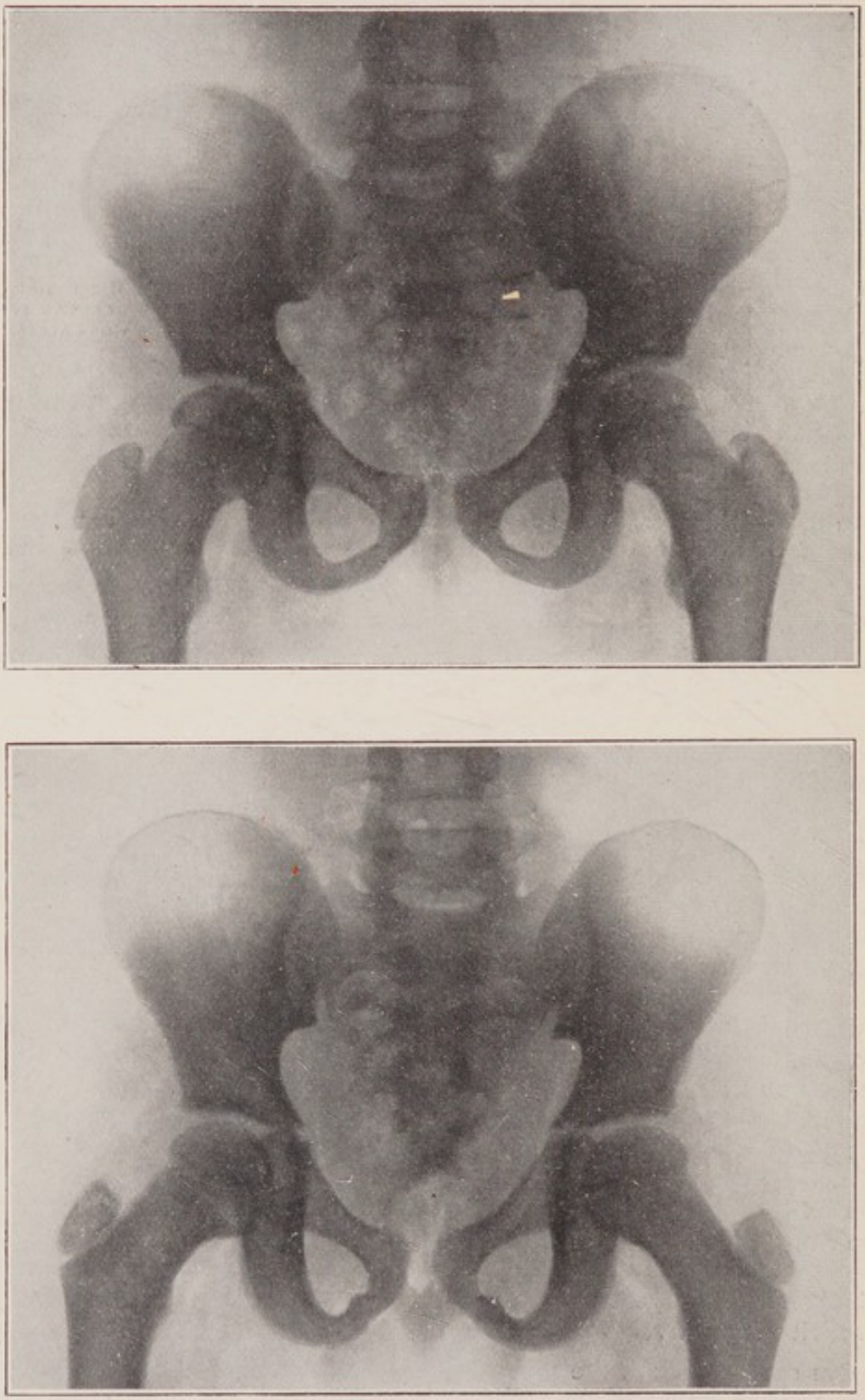

FIG. VI.—Radiograms of the pelvis of a girl aged 11 (above), and a boy aged 10 (below), showing the marked differences in contour *before* puberty.

accruing to both sexes from close association. There is no basis for co-education on the ground that the differences between the sexes are small or minimal during the period of so-called neutral childhood. As is shown by the radiograms of two children of ten years of age (Fig. VI), the pelvis of the boy and girl are as distinct in their sex features at ten years of age as at any later period of life. This is in accord with the appearance of the emotional and morose characteristics some years before puberty. This fact yields yet another argument for bringing the age of transfer from the primary school to the secondary school down to the age of eleven years.

HISTOLOGY OF THE BRAIN.

The architecture of the brain in the child from 7+ to 11+ still awaits intensive study and we are acquainted only with the gross differences between the new-born and the adult. Certain facts which have emerged from the comparison of the *foetus*, new-born babe and adult have an important bearing on the problems of education. In any given area of the *cortex* of the brain, the single layer of nerve cells in the *foetus* of four months undergoes differentiation into three layers of cells. These layers are called from within outwards the polymorphic or inner cell *lamina*, the granular or middle cell *lamina*, and the pyramidal or outer cell *lamina*. The three *laminae* are distinct at birth, and it is the outer cell *lamina*, which is the last to appear, which grows most markedly during childhood. In any form of *amentia* it is the outer cell *lamina* which fails to develop, and the middle cell *lamina* to a slighter extent. Further, in any form of *dementia* this outer cell *lamina*, which is the last to develop, is the first to undergo dissolution.

The fact that the order of appearance in normal growth is known, that the susceptibility of the various *laminae* to maldevelopment and decay is known, that the last layer to develop is the first to suffer, combined with the fact that this layer increases in thickness in the normal child from birth to maturity by more than 50 per cent., indicates the need for detailed knowledge of these processes in children of school age. It is possible that the processes of development and differentiation of the *laminae* of the cortex are susceptible to malnutrition and disease to a far greater extent than may at present be hazarded.

This process of differentiation of the cerebral cortex into three layers does not take place at the same time in all regions of the brain. It takes place in the visual *cortex* later than in the motor *cortex*, but before it occurs in the frontal *cortex*. In fact that portion of the brain which is regarded as peculiarly subserving the functions of the higher associations is characterised by a late appearance of differentiation. The child *kicks* in the womb, *sees* when he is born, *thinks* later. Since the area of the brain concerned with *thinking* is the last to undergo differentiation, this area is brought more and more clearly into the age period when malnutrition and acute disease are most liable to register their effects.

It is imperative that the age changes in the *cortex* from birth to seven years should be much more intensively studied. It is almost true to state that between the ages of two and eighteen years the changes are unknown. It is equally true that anatomical facts are wanting to suggest many of the precepts of the educationist and psychologist.

Excluding the gross changes found in aments and dements, it must be noted that, as there are wide individual variations in the degree of apparently normal cortical development, so there are wide variations in the degree of mental development in apparently normal infants and young children. At present we do not know to what degree, if at all, these normal anatomical and mental variations are related. This should not deter research, but rather stimulate it. Bolton ([55]) indicates the likelihood of a structural origin for individual differences in mental endowment.

In the varied growth patterns of the individual systems of organs in the child it is indeed fortunate that the nervous system enjoys a certain priority. Wilfred Trotter([56]) has emphasised the extent to which the nervous system is insulated from the remainder of the organism, and endowed with a special degree of resistance and durability. It is this special measure of protection which gives to the brain a preferential status and endows behavioural patterns with such significance in the study of growth. For instance, on the average, babies smile at 58 days, blink at 76 days, show co-ordination of the eye muscles in all directions at 78 days, oppose the thumb at 148 days, reach for objects at 152 days and sit at 217 days. The appearance of these reflexes is not a haphazard pattern involving only time and relationship, but is an orderly and progressive pattern involving intrinsic internal relationship. The extent to which the order of emergence and the time of emergence of these patterns may be altered by diseases or malnutrition still awaits careful examination. Zuehl([57]) has shown that events in health history have a higher correlation with variations in hearing ability than the latter have with chronological age. Ewing([58]), in his recent work on aphasia in children, concludes that in cases of linguistic retardation, the aetiological factor, in the absence of hereditary tendencies, is in some cases a period of lowered vitality retarding or arresting speech and language at a specific stage.

DIATHESIS, BODILY HABITUS AND PHYSICAL TYPES.

The attempts to classify children and adults into particular types of body build have always interested the physician. Such a subject allows of much loose theorising, much play on physical measurements and much bias in terms of one's own clinical experience in disease. Recent work in this direction has received a stimulus by reason of the ease with which the form, size and site of the *viscera* can be related to the skeletal outline with the aid of radiography of the chest and abdomen. Variation in physical form and in visceral topography has shown that there is a real correlation between the skeleton and the *viscera*. Stout children of stocky build tend to have hypertonic stomachs in a relatively high position. Slender frail children tend to have atonic stomachs placed at a low level. In heavily built children the thorax is short longtitudinally and the abdomen long. In slender children the thorax is long and the abdomen short. The degree of strength and *tonus* of the skeletal muscle exerts an influence on visceral topography. The abdominal muscles determine to some extent the shape of the abdominal cavity and the position of the contained *viscera*. The general *tonus* of the skeletal muscles influence the static poise or carriage of the child and so influence the shape of the abdomen. Any generally faulty attitude is reflected in the visceral topography.

Mills([59]) has classified the various types of body habitus as hypersthenic, sthenic, hyposthenic and asthenic. (Fig. VII.) The metabolic needs of a hypersthenic individual of the " John Bull " type require

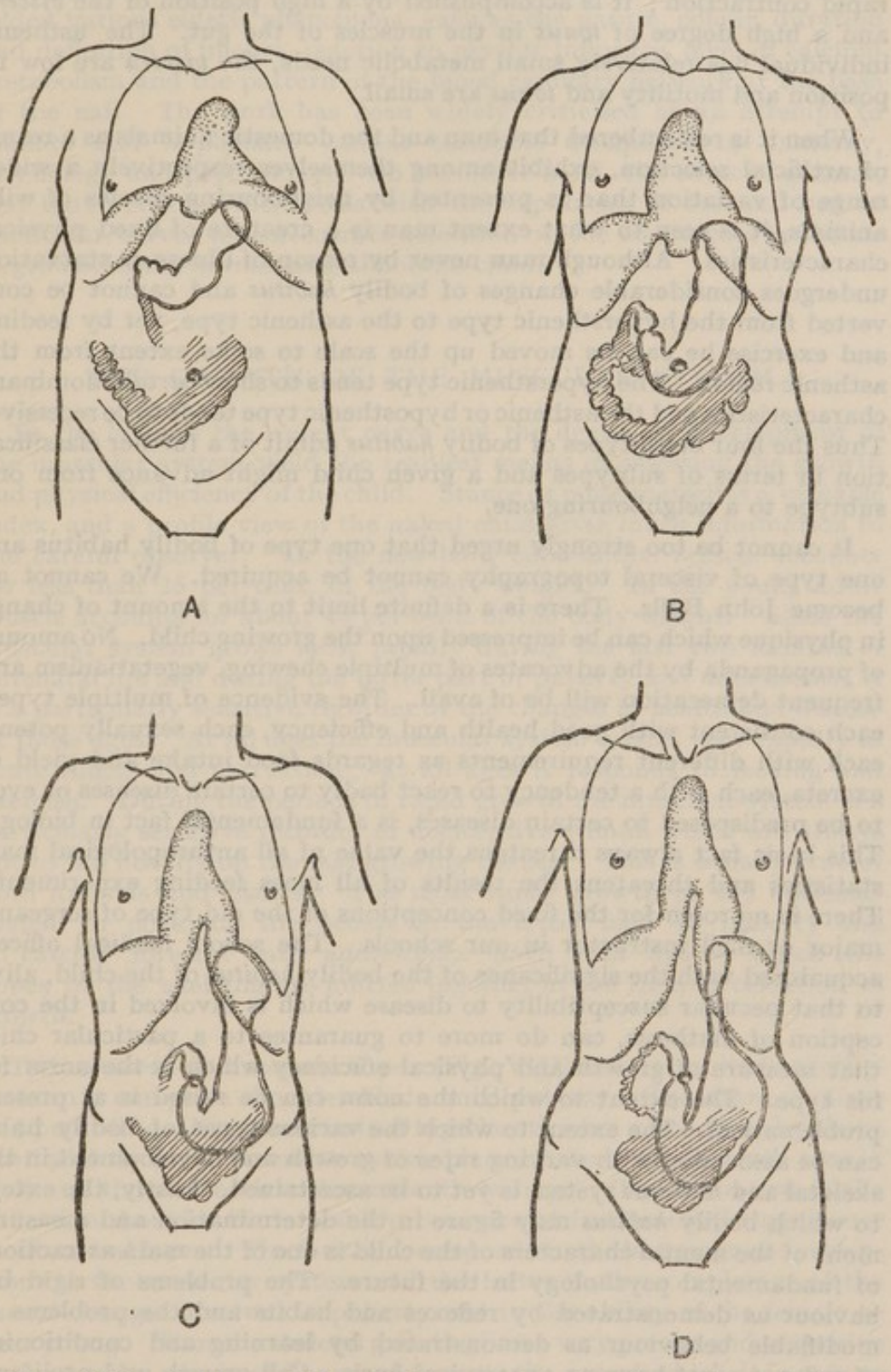

FIG. VII.—Outlines of the skeleton and main viscera traced from actual radiograms.

(A) Hypersthenic type. (B) Sthenic type.
(C) Hyposthenic type. (D) Asthenic type.

(After the late Dr. Walter Mills, Washington University Medical School, Saint Louis, U.S.A.)

that the alimentary tract should be adapted to the accommodation and digestion of a large amount of food commensurate with the activity of the individual. This requires a digestive system of great motility and rapid contraction ; it is accomplished by a high position of the *viscera* and a high degree of *tonus* in the muscles of the gut. The asthenic individual has relatively small metabolic needs, the *viscera* are low in position and motility and *tonus* are small.

When it is remembered that man and the domestic animals as a result of artificial selection, exhibit among themselves respectively a wider range of variation than is presented by neighbouring species of wild animals, it is seen to what extent man is a creature of fixed physical characteristics. Although man never by reason of illness or starvation undergoes considerable changes of bodily *habitus* and cannot be converted from the hypersthenic type to the asthenic type, yet by feeding and exercise he can be moved up the scale to some extent from the asthenic region. The hypersthenic type tends to show certain dominant characteristics and the asthenic or hyposthenic type tends to be recessive. Thus the four main types of bodily *habitus* admit of a further classification in terms of subtypes and a given child might advance from one subtype to a neighbouring one.

It cannot be too strongly urged that one type of bodily habitus and one type of visceral topography cannot be acquired. We cannot all become John Bulls. There is a definite limit to the amount of change in physique which can be impressed upon the growing child. No amount of propaganda by the advocates of multiple chewing, vegetarianism and frequent defaecation will be of avail. The evidence of multiple types, each consistent with good health and efficiency, each sexually potent, each with different requirements as regards food intake and yield of excreta, each with a tendency to react badly to certain diseases or even to be predisposed to certain diseases, is a fundamental fact in biology. This basic fact always threatens the value of all anthropological mass statistics and threatens the results of all mass feeding experiments. There is no room for the fixed conceptions of the old type of sergeant-major or drill instructor in our schools. The school medical officer, acquainted with the significance of the bodily *habitus* of the child, alive to that peculiar susceptibility to disease which is involved in the conception of diathesis, can do more to guarantee to a particular child that measure of growth and physical efficiency which is the norm for his type. The extent to which the norm can be raised is at present problematical. The extent to which the various types of bodily habit can be associated with varying rates of growth and development in the skeletal and nervous system is yet to be ascertained. Lastly, the extent to which bodily *habitus* may figure in the determination and measurement of the mental characters of the child is one of the main attractions of fundamental psychology in the future. The problems of rigid behaviour as demonstrated by reflexes and habits and the problems of modifiable behaviour as demonstrated by learning and conditioning of reflexes must have an anatomical basis. Cell growth and proliferation on the one hand and cell differentiation for special function on the other will probably be found to be the ultimate basis of a rational psychology, whether it be labelled " Gestalt " or not.

The most remarkable study of constitutional types and characteristics is that of Walther Jaensch ([60]) of Berlin, who has made a daring attempt

to correlate and synthesise data from many fields. Jaensch has examined in children the physique, physiognomy, expressive features, pulse, circulation, dermal and anatomical *stigmata*, galvanic and mechanical irritability in sensory and motor fields. To these he has added various eidetic phenomena, such as the nature, colour, duration and definition of images, reaction to psychic influence, level of calcium metabolism and the pattern of the blood capillary network at the base of the nail. The work has been widely criticised as an attempt to affiliate and hyphenate various scientific disciplines in anatomy, physiology and psychology. On the other hand, the work in general, and that portion which deals with the capillaries of the nail bed in particular, serves to concentrate attention on the converging problems of growth in the normal and abnormal child.

THE GROWTH OF THE MUSCULAR SYSTEM.

To the layman the weight curve and the degree of development of the muscular system yield the readiest means of assessing the growth and physical efficiency of the child. Stance or poise in itself is a valuable index, and a profile view of the naked child gives much information to the careful observer. In the new-born babe actual muscle accounts for less than 25 per cent. of the body weight. In the young adult muscle accounts for about 43 per cent. of the body weight. Since the muscular system grows most rapidly during the last two months of antenatal life and during the latter part of puberty and adolescence, it is a particularly sensitive recorder of the changes in health and disease at those ages. At all ages the muscular system wastes very rapidly in acute illness and starvation; at all ages it responds to feeding and exercise. During the periods of rapid growth the muscular system is a particularly sensitive recorder of nociceptive stimuli which are always apt to fall heavily on the fast growing tissues. This is equally true of both animals and plants. The most rapid growth of the muscular system in postnatal life occurs in the latter half of puberty and is carried forward into adolescence until that age at which the bones of the skeleton are knitted together at the time of cessation of growth.

The *coracoid* and *scapula* bones (Fig. VIII) are not united together to form a one-piece shoulder blade until puberty. The *ilium, ischium* and *pubis* (Fig. IX) are not united together to form a one-piece hip bone until slightly later, the union taking place at about the fifteenth year in girls and the sixteenth or seventeenth in boys. The formation of the definitive shoulder blade and hip bone are of fundamental significance in all animal forms. The former corresponds to the last stage of development in the muscular system and the latter to the completion of the sexual changes involved in puberty and to the ability of the female to bear young. Thus the skeletal growth gives a very precise and purposive indication by means of bony union as to the age at which it is safe to subject a given individual to heavy muscular work. No boy or girl with ununited parts of the shoulder blade or hip bone should be subjected to such heavy muscular strain as is involved in the carrying of the bricklayer's hod, the delivery of heavy parcels or standing for long hours in domestic service or behind the counter. Further, no boy or

girl should be submitted to the sustained muscular effort involved by playing 45 minutes " each way " in a hockey or football match. These anatomical landmarks in the growing child are definite and precise: they are disregarded only at peril.

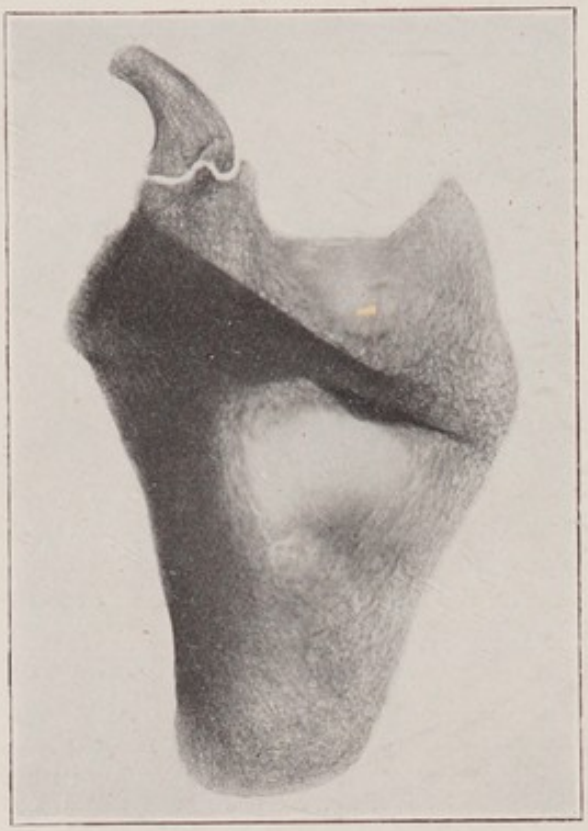

FIG. VIII.—Radiogram of the shoulderblade of a boy of 14 showing the line of cartilage between the coracoid (above) and the scapula (below). Both bones and the cartilage take part in the articulation of the shoulder joint.

Man is a biped and the erect attitude in itself is a severe muscular feat. To have transferred the weight shared equally between four limbs in the quadruped to two limbs in man has been a perilous task. The erect attitude is very fatiguing to children and is a most unsuitable position both because of the small size of the base covered by the feet and because of the high position of the centre of gravity due to the relatively large head and liver. To resist a push we stand with feet apart and knees bent. We must not expect children to stand like soldiers at attention. The economic position for a child is that which he adopts when playing. He stands with feet apart and knees bent, and he delights in squatting.

The perfect growth of the human machine requires a sound and well trained muscular system. The picture of a weak muscular system is all too common and in its milder degree is shown by the majority of our boys and girls. The children in secondary schools by reason of excessive homework and inadequate sleep, the children in boarding schools by reason of a faulty diet, and the children of the slums by reason of a summation of factors, present the picture of a weak muscular system. The curved back is accompanied by a poor respiratory system. The protuberant abdomen and weak abdominal muscle go hand in hand with imperfect absorption of food and inefficient pumping of blood

from the liver. The weak musculature of the lower limbs leads to knock-knee and flat foot. The general insufficiency of the circulation produces cold, blue, sweaty hands and feet. The muscular system is an integral part of a perfect piece of machinery most beautifully and most delicately constructed for sustaining the weight of the body and for allowing rapid, easy and elastic movements. The muscular system, by reason of its rapid growth, suffers severely in disease, malnutrition, inadequate sleep and unfavourable environment. On the other hand, as every farmer knows, no system responds so rapidly to good feeding, healthy surroundings, fresh air and exercise. The nation's reserves of sound womanhood and manhood demand that special care of the muscular system which cannot be guaranteed to-day because of the fact that the school-leaving age of the majority of the children precedes the period of active growth of the muscular system.

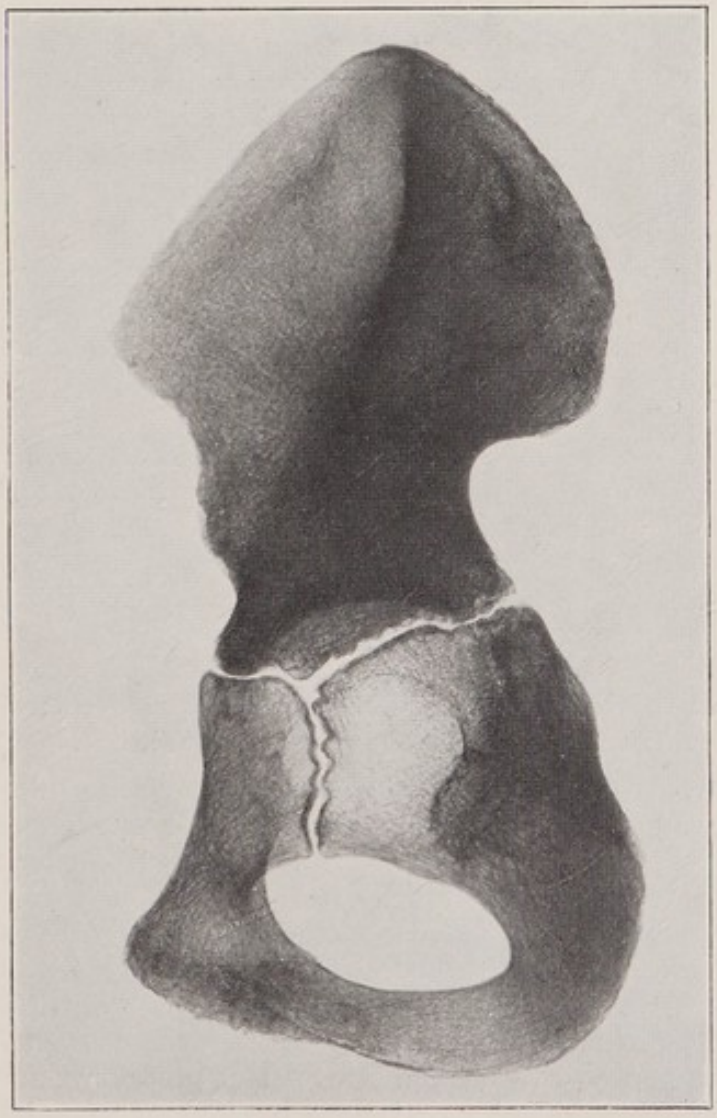

FIG. IX.—Radiogram of the hip-bone of a boy of 15 years showing the triradiate cartilage between the ilium, ischium and pubis. All three bones and the cartilage take part in the articulation of the hip joint.

A word of warning is necessary to the most vigorous advocates of the equality of the sexes. Not only are the stages of skeletal and nervous growth different in the two sexes, but the development of the muscular system is different. The bones of the female skeleton are on the average smaller and less heavily built within a given family. The bones are slender and the muscular and ligamentous markings are less distinct than in the male. In early childhood the boy has greater muscular power than the girl; at puberty the boy's strength is nearly 50 per cent. greater and at adult age nearly 100 per cent. greater. Games involving vigorous throwing and jumping are less suitable for girls.

FATIGUABILITY—MENTAL AND PHYSICAL.

The commonest symptom complained of by adults presenting themselves for medical treatment is "fatigue." It is the first and most significant symptom of innumerable diseases. Fatigue is an important sign-post in the child. The rate of onset of mental fatigue may be very different from the rate of onset of physical fatigue. The phase of growth in the child, nutrition and sleep may influence the onset of either to a considerable extent. The limit of physical fatigue can be extended by well-devised physical exercises and training. It is still doubtful to what extent the limit of mental fatigue may be so extended. It is more difficult to obtain and sustain in relation to mental fatigue the equivalent of that spirit of "team" work which is so invaluable in postponing physical fatigue both at work and play.

We are not justified in assuming that a child who has been away from school for six weeks, is in a fit state to return to school and take up his studies where he left off. The scars of illness in bone suggest that, quite apart from the familiar changes in temperament such as whimpering and fretfulness, illness may produce an arrest in the processes of "facilitation" which are so characteristic of most processes of learning. Mental set-backs of this kind have to be considered, and no attempt should be made to force the young convalescent. Moreover, the reactions of individual children after a prolonged illness are most complex. The fact that one child responds actively and visibly by an expression of grief (dolor pectoris), increases the danger of ignoring the other and more important case of the undemonstrative child who suffers in silence much mental anguish (angor animi).

In particular it must be emphasised that the child who is above the average in weight and height, is often more susceptible to fatigue and more severely handicapped by illness than the normal or even the subnormal child. Lack of interest in his surroundings, retardation in reaction time and low grade of mental retentivity are often seen in this type of child who tends to become the "loutish" lad of the higher classes of the school. The child who has "overgrown his strength," also affords a difficult problem in this respect. Until the characteristics of mental and physical fatigue are better understood, "forcing" children in school, and out of school by "home-work" is a grave danger. The child who is forced beyond his efficient rate of mental activity, can only attain the standard of progress set for him with the expenditure of his maximum effort. The fatigue induced by the prolonged exertion of his maximum effort tends to diminish his efficient rate of mental activity, which in turn reduces the peak of the maximum

effort of which he is capable. This constitutes a vicious cycle. The onset of mental fatigue is occasionally accelerated in some children by the practice of well-meant "nagging" on the part of the parent or teacher.

Mental fatiguability displays marked differences in a given child according to the nature of the task, whether it involves smell, sight, hearing or other senses. It varies widely from child to child. That valuable mental endowment connoted by the term equanimity may to a considerable extent consist of an obtuseness to certain external *stimuli* such as cold, noise and interruption, as well as an ability to disregard internal *stimuli* such as those of digestion on the one hand, those of the joints, muscle and skin on the other, and even those now often grouped under the term "phantasy."

Sleep is as indispensable as good food to the child. Sleep and food must be guaranteed in sufficient quantity at regular hours. The requirements of both vary with age, build, temperament and rate of growth. It is most difficult to dissociate the effects of malnutrition from the effects of inadequate sleep. The child of thin, anaemic langourous type who arrives at school tired, aetiolated and incapable of concentrating on mental work, is often suffering mainly from loss of sleep. Home work, social duties, compulsory sports, the loud speaker of the wireless broadcast and attendance at cinemas present an accumulation of physical and intellectual exigencies which children are unable to bear without serious inroads on that nocturnal repose which is one of their main needs during the period of growth. Neither artificial sunlight nor vitamin preparations afford a substitute for sleep.

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APPENDIX III.

MEMORANDUM ON THE MENTAL CHARACTERISTICS OF CHILDREN BETWEEN THE AGES OF SEVEN AND ELEVEN BY PROFESSOR CYRIL BURT, D.Sc., PSYCHOLOGIST TO THE LONDON COUNTY COUNCIL.

I.—THE DATA AVAILABLE.

The years from seven to eleven or twelve might almost be termed the Dark Ages of childhood. Comparatively little is known of the characteristics distinguishing them. The mental peculiarities of puberty have repeatedly been investigated; more recently, much work has been done on the periods of early and later infancy. Stanley Hall has studied the adolescent; Gesell the baby; and Piaget the child of the infant school period. But no psychologist has hitherto concentrated specifically on the characteristics of the growing boy or girl from the age of 7 to the onset of puberty.

Textbooks on the general development of children still treat this period either as a colourless transitional stage with no peculiarities of its own, or else read into it certain distinctive features deduced from some hypothesis about the general character of mental growth. Nevertheless a considerable body of first-hand data now exists; only the material lies scattered in the pages of periodicals and monographs, and has never been brought together for study with this special period in view. Tests of specific mental capacities have been applied systematically to children of all ages; the results have been recorded separately for each year of the child's early life; but the conclusions have been studied rather from the point of view of the particular test than from the point of view of a particular epoch in the child's mental growth. Hence the results have never properly been collated or analyzed; and it still remains an urgent problem for the future investigator to inquire what, if anything, distinguishes the mental life of the child at this stage.

The Stages of Mental Growth. The traditional descriptions of mental growth divide the whole period from birth to maturity into a series of sharply demarcated stages. The limits of each stage and the designations employed vary from writer to writer. There is, however, on the whole a preference for a threefold sub-division. A critical change is supposed to overtake the child every seven years; and commonly each

of the three intervening phases is further sub-divided into two halves, so that in all six successive stages are generally recognised.(1) They might be arranged as follows :—

Period.	Age-limits.
I. Infancy—	
1. Babyhood	0–4
2. Infant school period	4–7
II. Childhood—	
3. Junior stage	7–11
4. Senior or pre-pubertal stage	11–14
III. Adolescence—	
5. Puberty	14–18
6. Late adolescence	18–21

The Artificiality of the Sub-divisions. The chief fixed points in this scheme—the ages of 7 and 14—are based on physiological rather than psychological changes—namely, the beginning of the second dentition and of puberty respectively. Careful statistical studies, however, show that these two changes are far more variable and indefinite than was originally assumed.

Several of the ages allotted coincide rather with external changes in the child's life than with internal changes. Thus, the age of 4 is approximately the age at which most children first go to school ; the age of 7 has long been the accepted age for promotion from the infants' to the upper department ; the age of 14 is the age at which the child leaves the elementary school ; the age of 21 is the age at which the child ceases to be an infant in the eyes of the law. There can be little doubt that many of the new mental characteristics which appear soon after these ages, are due to the external changes which then take place, much more than to any intrinsic principle of mental growth or to the sudden emergence of new faculties or interests.

It is convenient to retain these sub-divisions. But the one fact that modern investigations reveal most clearly is the marked continuity of mental development. There are no sudden breaks ; and it is to be observed that the suddenness with which these external changes are imposed on the child, so far from conforming to new needs or powers, may sometimes put a severe strain on his adaptability. The mental growth of the child is a fairly steady advance up an inclined plane, not a jerky ascent from one level to another by a series of sudden steps ; and the lines drawn between the successive stages of mental growth are more or less artificial. When we think of what distinguishes the infant from the baby, or the youth from the infant, we are not contrasting the child just before the age of 7 with the child after the age of 7, but a child somewhere in the middle of the former period, aged 4 or 5 perhaps, with a child somewhere in the middle of the latter period, aged 8 or 9. With these reservations it may be fairly said that

(1) The earliest endeavour to deduce such subdivisions from scientific data seems to be that of Vierordt (*Physiologie des Kindersalters* (1881, see esp. p. 209). For summaries of the various schemes proposed, see Chamberlain *The Child* (1906, p. 70), Claparède, *La Psychologie de l'Enfant* (1916, p. 420), and Rusk, *Experimental Education* (1910)—a brief textbook based on Meumann's monumental work *Die Experimentelle Pädagogik*, 1907.

the period between seven and eleven displays features sufficiently characteristic to render it desirable, on psychological as well as on administrative grounds, to treat these years as marking a distinct stage in education.

II.—INTELLECTUAL DEVELOPMENT.

General Theories. One or two notable attempts have been made to bring the general course of mental development under the terms of a single formula. These hypotheses may be briefly stated here. We may then consider how far recent research provides evidence for their support.

(a) *Stratification Theory.* If we accept the view that mental development is spasmodic or rhythmical, we could explain the several stages or steps as due to the emergence of new capacities. Thus many writers have assumed that certain faculties, supposed to be non-existent up to a certain age, suddenly emerge, and develop rapidly to a maximum. As a result, definite layers of mental life are laid down and consolidated, and later on new layers are superimposed on top of these. The prevailing view may be summarized as follows :

(i) During the first year of life mental development is held to consist mainly in the mastery of the primitive senses. The activities of the baby are limited in extent, and declared to be nutritive rather than muscular. But towards or soon after the age of 12 months, the powers of walking and of speech appear, and are rapidly perfected. Then, as the child begins to toddle about, handle things, and learn their names, he gradually extends his range of observation. Thus the period of early infancy is sometimes described as predominantly a period of sense-perception.

(ii) The period of later infancy is usually described as a period of motor activity rather than of sensory activity, of muscular development rather than of perceptual development. Now the child learns to control the actions of the finer muscles ; he learns not merely to walk and talk, but to walk firmly, to speak clearly, to dance, sing, play active games, and above all to master the manipulative powers of the fingers. All this takes place during the period of the infant school, and thus the growing child should bring to the junior department steady limbs, well-trained fingers, an observant eye, quick hearing, and a nimble tongue.

(iii) The next phase is said to be characterized by a marked development of memory—of mechanical memory during the junior period and of logical memory during the senior period.

(iv) Finally adolescence is supposed to be characterised by the emergence of the faculty of reasoning, together with greatly heightened interest in the social, religious, and aesthetic aspects of life.

(b) *Recapitulation Theory.* What determines the successive emergence of these different faculties and these various interests ? The favourite explanation is that the development of the individual tends to reproduce in rapid and abbreviated form the evolution of the race. Stanley Hall, for example, has endeavoured to explain the supposed arrest of intellectual development between the ages of 7 and 10 by assuming that the child then reaches what was formerly the final stage of maturity for the pre-historic savage of the pigmy type—from whom he supposes civilized man of to-day to be descended.

Both theories have been accepted by those who have followed Stanley Hall ; and have been widely adopted in educational textbooks(1) It is important, therefore, to realize that the present trend of psychological thought is working along lines which, on *a priori* grounds alone, must largely undermine these plausible generalisations. In the first place, the mind is no longer held to consist of distinct faculties. All intellectual operations, from sense-perception to memory and reasoning, are envisaged as consisting essentially in the association of sensory contents (percepts, images, and ideas) in systems more or less elaborately organized. In the second place, the assumption that the mental characteristics acquired by individuals are transmitted biologically to their progeny, is now held to be without foundation. Memories and habits, and the dexterity which comes from exercise and training, are not inherited : they have to be learnt afresh by each succeeding generation.

It is clear, then, that we can no longer follow the method of earlier psychologists, and deduce mental characteristics from fundamental assumptions as to the nature of physical, biological or mental development. Such deductions may prompt suggestive hypotheses for research or generalization ; but the distinctive features at each age must be discovered by a direct application of experimental tests, or of controlled statistical observation, to the study of psychological qualities at first hand.

General Intelligence. The mental capacity which is of supreme importance for intellectual progress is intelligence. Intelligence, in the technical sense, may be defined as inborn, general, intellectual ability. Fortunately this central capacity is the one for which the most reliable tests exist and the one which has been most thoroughly tested and measured at every year of child life.

The curves published for the development of intelligence form practically ascending straight lines from the age of 3 to that of 12 ; then they show a sharp bend ; and become practically horizontal from the age of 16 onwards.(2) This suggests that from the age of 5 to that of 12 the annual increments are about equal, but that with puberty the maturation of intelligence comes rapidly to an end. The majority of these curves have been obtained with the tests in the Binet Simon Scale ; but, since these tests have themselves been standardized on the assumption that the annual increment is equal, the inference is to some extent an argument in a circle. Nevertheless, even with tests in which the unit is independent of the standardisation of the test, the data indicate that—at any rate within the ages for which the test is suitable—growth is fairly uniform.

From the age of 5 to that of 7, girls are slightly superior to boys, the difference being about half a year. Towards the age of 9 or 10, boys, if

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(1) An interesting attempt to base a scheme of education upon these two theories will be found in *Cheiron's Cave*, by D. Revel (*see* especially p. 38 for a vivid picture of mental development conceived along these lines).

(2) For the results of intelligence-tests, as applied to English children, see L.C.C. *Report on Mental and Scholastic Tests*, especially the curve of development plotted on p. 146.

anything, are temporarily superior; at the ages of 12 and 13 girls are once more better than boys. After puberty, the boys catch up once more; and little if any sex-difference can be established at later ages.

From the point of view of educational organization, one of the most important facts revealed by intelligence tests is the wide range of individual differences, and its steady expansion from year to year. At the age of 5, children are spread out between the mental ages of about 3 and 7—a total range of four or five years. By the age of 10 the range has doubled; and probably goes on enlarging until the end of puberty.

Older children, therefore, differ far more widely in intellectual capacity than younger children. During the infant period they can be grouped together without much regard to their different degrees of mental endowment. At the age of 8 or 9, however, to put together in a single room all those who are of the same age would be to organise a class that was extremely heterogeneous. By the age of 10, the children of a single age-group must be spread over at least three different standards. And by the age of 12 the range has become so wide, that a still more radical classification is imperative. Before this age is reached children need to be grouped according to their capacity, not merely in separate classes or standards, but in separate types of schools.

Special Intellectual Abilities. For most of the more important special abilities, standardized psychological tests have now been devised; and accurate measurements have been obtained by applying these tests to children at successive ages of school life.(1) No longer have we to content ourselves with vague impression or personal observation for judging the characteristics of any one period of development. The mental difference between one age and another can be precisely measured. The results so obtained may here be briefly reviewed.

The outstanding result is this. Between the ages of 7 and 11 all intellectual activities appear closely correlated one with another. Towards puberty, indeed, these inter-correlations tend to diminish. But, during the period with which we are concerned, one central, underlying factor tends to determine the general level of the child's ability. This discovery seems of itself to disprove the older view that special intellectual capacities emerge suddenly at different ages, or develop more rapidly at one period than at others. The mere fact that one such fundamental function underlies all concrete intellectual activities, and determines their efficiency, is presumptive evidence against the view that mental development could consist in the successive appearance of a number of isolated faculties one after the other.

Sensory Capacities.

The essential characteristics of sense-perception exhibit but little change during the school period. They are the activities which mature earliest; and, during the stage with which we are concerned, probably change less than any other intellectual process. Nevertheless, the age-norms lately obtained with standardized tests show that in the two senses which are most important for the traditional work of the school—sight and hearing—the power of fine discrimination undoubtedly improves.

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(1) For a convenient collection of test-results see Whipple, *Manual of Mental and Physical Tests.*

Vision. The eye of the child is an imperfect organ; it is, during earlier years, naturally under-focussed, and ill adapted for close work such as reading and writing. With age the amount of normal vision steadily improves: on first coming up from the infants' department about one child in three has normal vision; before leaving the public elementary school about half the children have normal vision. At the same time, however, the percentage of grave defects greatly increases. Thus, although on the average there is a gradual improvement in the acuity of vision (due no doubt to the development of the eye-ball and to general training), there is among a limited number a marked deterioration (due doubtless to pathological causes, some perhaps induced or at any rate aggravated by the school conditions). In the infants' school the commonest defect is hypermetropia or longsightedness; but in the upper department myopia or shortsightedness becomes increasingly frequent. The child's sight not only improves for near objects; but clear vision tends, in many individuals, to become limited to objects close to the eye. These facts have a direct bearing upon the reading-materials which the child is required to use. Up to the age of 7 the letters should be large: the minimum height of the face of the short letters should be about 3 mm. From the age of 8 to 11 the height may be reduced to about 2 mm. From the age of 12 onwards the child can read with ease a good ordinary type suitable for the adult, say about 1·5 mm.

Defects of visual acuity are somewhat commoner among girls at this age. Their colour discrimination, however, is much superior; and colour blindness, comparatively frequent among boys, is extremely rare among girls.

Hearing. The available data indicate that by the age of 7 auditory acuity is practically mature. It is true that from the age of 7 to that of 12 the actual figures show a slight improvement; probably, however, this is mainly due, not to any change in the sense-organ itself, but to increased ability to understand and undertake the test. The infectious ailments of early childhood, such as measles and scarlatina, are responsible for a large proportion of the increase in grave defects (e.g. partial or total deafness) manifested in earlier years. Medical treatment of such conditions as adenoids and catarrh or suppuration of the middle ear, explains the subsequent decrease. Much deafness, however, still obtains which is definitely preventable; and its prevention will depend not merely on the results of brief medical examinations at the beginning or end of the period, but upon the alertness of the teacher in watching for mild and intermittent symptoms from the earliest years. Undetected visual defects in the infants' school and undetected auditory defects in the junior department are responsible for much educational backwardness later on.

The discrimination of pitch, as distinct from the mere capacity to hear faint sounds, shows a more steady improvement. It has often been argued that young children at the age of 7 or 8 cannot appreciate tones with sufficient accuracy to make it worth while to attempt any musical education until a later age. Tests of auditory discrimination dispose of this argument. Certainly, at the age of 6 children can barely discriminate $\frac{12}{32}$ of a tone, i.e. not much less than a semi-tone. Their discrimination, however, rapidly improves to about a quarter tone ($\frac{8}{32}$) at the age of 7, and $\frac{5}{32}$ at the age of 11. The inaccurate singing

of children at the age of 8 is thus due more to poor muscular control and lack of training than to auditory incapacity; and we may conclude that the pupils entering a junior school are fully capable of the tasks ordinarily required of them in musical instruction.

All investigators except Seashore (one of the most careful investigators of the musical capacities of children) agree that in pitch-discrimination girls are slightly superior to boys. This certainly holds good of children tested in Oxford, London, and Liverpool.

During the greater part of the junior school period, harmony does not appeal to the child so much as melody, nor melody so much as rhythm. His favourite rhythm, developing as it does from the natural swing of the limbs as in walking, is based on duple time rather than on triple time, on the march rather than on the waltz; and the major key is almost always preferred to the minor.(1)

Touch. The sense of touch is one of the few capacities in which children are definitely superior to adults. It is broadly true to say that between the ages of 7 and 17 touch-discrimination degenerates by about one-half. From the age of 8 onwards girls become increasingly superior to boys in this form of sense-discrimination.

Muscle Sense. There is a sixth sense which is of great importance for practical work in school, namely, the so-called muscle sense. It is through this sense that we appreciate movement and position in our limbs, hands, and fingers. The usual way of testing it is to employ a graded series of weights; it does not necessarily follow, however, that other forms of muscular discrimination are correlated with ability in this test. Using tests such as these one or two earlier investigators concluded that in muscular discrimination "the younger children were almost equal to the older ones, and both were not far from adults." More elaborate investigations in America, however, seem to show that a steady improvement continues from the age of 7 up to the age of 12 or 13, when boys and girls can distinguish differences which are only half the size of those distinguishable at the age of 7. All investigators find boys superior to girls in these tests, at any rate between the ages of 8 and 11.(2)

The refinement of the muscle-sense is an essential factor in the improvement of manual dexterity—an improvement which is a great feature of the years from 7 to 11. Possibly because the sensations received from the muscles and joints are so dim and vague, possibly, too, because they find no name or place in the traditional list of the five human senses, the muscle-sense is greatly neglected. It is capable of extremely delicate training; and more should be done at this period towards cultivating it.

The young child gains far more knowledge of the external world through this sense than does the adult. For him immediate contact, and the experiences of movement, weight, resistance, and relative

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(1) These conclusions are based on rather early investigations; and, in view of the great improvement now taking place in musical instruction, perhaps need re-investigation.

(2) At 7 and again at 11 to 13 girls are possibly equal or slightly superior.

position, ascertained through so-called "touch," are of supreme significance and interest. Hence object-lessons and concrete demonstrations should consist in allowing the child not merely to gaze but also to feel, handle, and manipulate. The label and the injunction "Please do not touch" should be discarded at this age.

Movement.

Muscular Strength. On the whole, capacity for movement develops later than capacity for sensation. Sheer strength increases far more rapidly towards the end of the school period than towards the beginning. In tests of grip, for example, there is a moderately rapid improvement from the age of 4 to that of about 6 or 7; but from the age of 7 to that of 12 the improvement is decidedly slower—very slow indeed compared with the rapid increase in gripping-power from the age of 12 to that of 15 (in girls) or that of 17 (in boys).

Even at these early years boys show more muscular strength than girls. The difference, however, is very small compared to that obtaining in later years. The sex-difference in muscular endurance has also begun to show itself by this period. Accordingly, although within the classroom the two sexes may be educated at this age along similar lines, outside the classroom—particularly in games and physical feats—the sex-difference cannot be ignored.

Speed. In speed of movement (as tested, for example, by rate of tapping) there is a fairly steady improvement from the age of 6 to that of 18. The figures suggest that speed increases most between the ages of 9 and 11, and that about puberty there may even be a slight drop. These results are corroborated by tests of speed of writing: this increases more rapidly after the age of 7 than before, and most rapidly of all between the ages of 7 and 10.

Dexterity. With tests of manual dexterity, sufficient data have not yet been obtained to determine the yearly increments clearly. From the age of about 5 up to that of 9 there appears to be a marked improvement; but thereafter the improvement seems to diminish. Towards puberty, indeed, there seems to be a definite retrogression. There is no clear or consistent sex-difference at this age. If anything in fine finger-work (e.g. neat writing) girls are perhaps a little more dexterous. Boys are rather better at drawing, at any rate before puberty.

During the infant stage the child is learning to control the larger muscles of the trunk and limbs; during the junior period he is learning to control the finer muscles—those of the eye, of the tongue, and above all of the fingers. The use of the eye in reading and in active observation, the use of the tongue in clear and expressive speech, the use of the fingers in simple arts and crafts of every kind—this should be among the three-fold aim of the school curriculum for boys and girls at this stage. The theory, alluded to above, that the infant stage and not the junior stage is the epoch of motor activity is gravely mistaken; and, if it leads to or supports the view that handwork is work for juniors and not for infants, it is likely to do much harm. All through the junior period children are pre-eminently active, and learn by doing; at this stage, therefore, so far as possible, every subject might be taught

through active work rather than through mere passive reception. And it must be remembered that the young child, unlike the older child, is still far more interested in the actual job in hand than in the acquisition of dexterity or new forms of skill as such.

Higher Mental Capacities.

The higher intellectual capacities are more vaguely defined. Standardized tests have not as yet been used on any extensive scale ; and less reliable data are at present available.

Attention. For the various aspects of what is loosely called attention innumerable tests have been devised. Perhaps the most definite are the tests for the scope of attention.

The limited scope of attention proves to be one of the main intellectual differences between the child of 7 and the child of 14. A time-honoured question, put again and again to the psychologist, is this : to how many things can a child attend at once—to one thing only or to several ? The answer, for a child as well as for an adult, is simple : we can attend to as many things as we like, provided they are so organized as to form a single whole. It is in this capacity for mental organization—for "noetic synthesis," as it is sometimes called—that the young child is chiefly lacking.

The limits of his apprehension are narrowed to a point which few teachers ordinarily realize. For a child to apperceive any group of ideas—for him to attend to them, that is, as forming a single unitary whole and conveying a systematized meaning—the number of ideas must be extremely few, and the scheme according to which they are combined must be extremely simple.

Other tests of attention are concerned, not with its scope, but with its duration. The child's power of sustaining voluntary attention increases rapidly from the age of 7 to that of 11. Nevertheless, the traditional work of the lower standards still over-estimates that power. There is still a tendency to expect the child to sit motionless for long periods listening to protracted discourses, or to keep him bending over his desk, working out long sums or reading lengthy paragraphs. If the efforts of concentration are made brief but intense, it will be found that the child's intellectual penetration is far sharper than is ordinarily assumed. What is presented to him, therefore, whether by way of oral instruction, reading-matter, or arithmetical exercises, should be limited to a few simple facts or to two or three short steps. The actual length of the total lesson does not matter so much, so long as it is broken up into small digestible morsels. If, during the course of it, there is plenty of change, and the child is allowed ample freedom to use his hands, freedom to move about the room, freedom to talk if he wishes, his attention will keep renewing itself. As he grows older, however, and reaches the end of the junior period, the child may well be practised in the power of maintaining attention by a continuous effort of will—learning to keep steadily at stiff tasks even when interest is waning and the pleasure of novelty has worn off.

Fatigue and Boredom. At these ages the young child is singularly tireless. What the teacher takes to be mental fatigue is usually nothing but boredom. It is not the child's capacity but the child's interest that quickly becomes exhausted.

The lessons in which so-called mental fatigue is likely to show itself most are, first of all arithmetic, and secondly those in which the fine muscles of the fingers and eye are over-strained, such as prolonged reading and writing. In these directions, therefore, the tasks ordinarily set to the child in existing syllabuses might well be eased ; and the burden of long sums, of lengthy compositions and dictations, and of memory-drill on tables or on spelling might well be lightened.

The older medical and psychological textbooks are full of warnings against the dangers of overworking young people at this tender age. Yet, between the ages of 7 and 11, genuine instances of overwork are exceedingly rare ; and serious harm hardly ever appears as a result of excessive intellectual activity. The damage, if any, is likely to be physical in origin rather than mental—due to lack of exercise and fresh air, and to the maintenance of an unnatural sedentary posture. Even later the blame, as a rule, has still to be laid on emotional rather than intellectual causes : the symptoms of over-pressure spring, not from excessive brain-work, but from worry about examinations, strained relations at home, and powerful disturbances of feeling of various kinds. The child of the junior school, however, is less sensitive to these emotional troubles than the young adolescent.

Memory. Tests yield no evidence for any remarkable acceleration in power to memorize at the beginning of the junior school period. Memory goes on improving, but it improves at a fairly even rate. The child's memory appears strong at this period only because his higher intellectual capacities are comparatively undeveloped or unused. It is far easier for a teacher to get the young child to learn a fact by rote than to get him to understand its causes, and re-discover it when he wants to recall it, by the aid of reasoning from experience or first principles : hence the preference for memory-work is the teacher's rather than the child's. Certainly, at the earlier stages, i.e. up to the age of about 8 or 9, the tiny child shows a singular fondness for mechanical reiteration, for routine-like repetition, and for an almost obsessive performance of the same act over and over again. In Standards I and II, therefore, advantage may still be taken of this tendency ; and the reaction against mechanical memorization must not be allowed to go too far. But by the age of 9 the mechanical methods of memorization are being superseded by intelligent methods ; and the teacher should take due note of this change.

Nevertheless, the junior school is undoubtedly the place where the child must finally master the three *Rs.* The mechanical elements of reading, writing (including spelling), and arithmetic, must be so thoroughly learnt, that by the time the child is transferred to the secondary or post-primary school they come to him automatically, and his attention is left free to turn itself to higher things. Hence a certain amount of sheer memorization will be indispensable at this stage. At the same time, much of the present drill and drudgery may be diminished, and memorization may be greatly facilitated, if a proper interest be stimulated in what is to be memorized, and if appropriate incentives be provided for the task of memorization.

Imagery and Ideas.

(i) *Reproductive Imagination.* A good deal of experimental work has been done upon the child's capacity for memorizing material according

as it is presented or recalled in different sensory terms—through the eye, through the ear, through touch or the muscle sense. During the later stage of primary education the majority of pupils appear to be visualisers. They imagine things with the mind's eye. If the teacher could penetrate into the consciousness of such a child, he would find the child's thoughts unrolling themselves before him rather like a cinematographic film. Within the teacher's mind the film is probably a talking film, and the film itself is less clear than the talk—the chief talker being the teacher himself. And the teacher is too apt to talk out his thoughts before the child much as he talks them over to himself, without troubling to call up concrete visible pictures.

What is presented or suggested to the child of this age, then, should be presented or suggested in concrete, pictorial, and visible form. Towards adolescence there seems no doubt that the power, or at any rate the habit of visualisation, tends to diminish; and the more intelligent children tend to think in terms of words rather than in terms of concrete images. How far this is due to the verbal and bookish character of current instruction need not be discussed here. But the teacher who deals with boys or girls of 8 or 9, must bear constantly in mind that, while he himself finds it easy to think in verbal terms, they require rather to think in terms of concrete things and of visual images. Throughout this period the school subjects and their presentation must be kept closely related to the child's concrete every-day knowledge and his own immediate experience.

In the ordinary time-table the most abstract subject is arithmetic; and I believe every psychologist would strongly plead that the amount of arithmetic usually set at this period should be reduced. The child should not be troubled with quantities, or fractions of quantities, which he cannot possibly visualise; and it should be remembered that, so long as the arithmetical problems are such as naturally arise out of his own ordinary activities (shopping or handwork, for example), mental work is for him less abstract than work on paper.

(ii) *Constructive Imagination.* Imagination, in the ordinary sense of the word—the exercise of creative as distinct from reproductive imagination—should undoubtedly be cultivated during this period. In scientific, as well as in literary or artistic work, it will be found that, even at this early stage, the child's imagination is quite capable of taking intellectual flights, if only what is to be imagined can be pictured in concrete form. But, as the child grows from an infant into a junior, it is important first of all to control and stabilize his gift of fantasy. He should be gently brought down from the world of private make-believe to the world of matter-of-fact. The recrudescence of fantasy, that will overtake him later on during adolescence, will lose its risks, if close contact be established with reality at this stage.

(iii) *Contents of the Junior's Mind.* With what particular images, then, is the young mind stored? What ideas has he already gathered from the life around him?

One of the earliest experiments carried out by German psychologists, consisted in taking a careful inventory of the ideas familiar to young children when they entered the kindergarten or the primary school, such investigations always reveal amazing variations, and a surprising number of gaps, in the child's general information. Stanley Hall, for example, repeating the experiment with Boston children of 6 to 7 years

of age, gives the following figures : 54 per cent. of the children do not know what a sheep is like ; 20 per cent. have never seen a butterfly ; 80 per cent. do not know what a beehive is, where the lungs are, what dew is, or a triangle or an island ; 90 per cent. do not know the origin of flour, of cotton things or of leather things ; over 50 per cent. do not know the origin of butter, bricks, or wooden things : and so on through a hundred or more items.(1)

With London children of the age of 7 at the present day these percentages would be reduced by more than half. But it may be safely said that the working contents of the average child's mind, on entering the upper department of the primary school, are likely to be far more limited than most teachers assume. Two points are clearly brought out by such inquiries. First, during these earlier years, the greater part of the imagery with which children do their thinking has been acquired not in school, but out of it. Secondly, however varied or instructive may be the child's environment, many things may pass before his eyes day after day and still remain unnoticed. Evidently, therefore, at this stage it will not be sufficient to use names of common everyday things and assume that the child at once calls up a clear and concrete picture of the things for which the names stand.

Reasoning.

(i) *Perception of Relations.* There is a widespread notion that during these early years the child cannot reason. Reasoning is supposed to be a faculty which only emerges towards adolescence. Reasoning, argues Stanley Hall, is the mental capacity which evolved last of all in the history of the race, and consequently it appears last of all in the development of the individual. " Children," he writes, " cannot reason much beyond their experience and environment until puberty." What, then, is meant by reasoning ? We no longer regard it as a new and unanalysable faculty. Thanks to recent research its detailed nature is now well understood.(2)

Reasoning depends essentially upon the perception of relations. Both memory and reasoning work through associations. But in memory the association between the facts is not itself made conscious or explicit ; in reasoning, the child not only associates two things, but also clearly perceives the relation between them.

The commoner and simpler relations—those of space, time, number, quantity, similarity, contrast, and the like—can all be grasped by the child before the age of 7, provided only the material is made sufficiently simple and sufficiently familiar, and adapted to his limited powers of observation.(3) It is not, however, until a somewhat later age that the

(1) See especially the chapter on the " Contents of Children's Minds " in Stanley Hall's volume on *Aspects of Child Life and Education* (1907, pp.1 *et seq.*).

(2) The important work of Spearman and his school (lately published in his book on *Intelligence and the Principles of Cognition*) brings together the more important facts, and the theories that emerge from them. The principles that Spearman has thus brilliantly unravelled have a close and perhaps a revolutionary bearing on teaching-methods at this stage—implications, however, which have hardly yet been worked out.

(3) See *Journal of Experimental Pedagogy* (1919), " The Development of Reasoning in School Children."

child begins to observe these relations spontaneously. His progress in this respect is easily tested by what are technically known as tests of observation and testimony. Binet's familiar test of describing a picture brings out clearly several distinct stages. At the age of 3 or 4 the child merely enumerates isolated objects or persons that he sees in the picture; by the age of 6, however, the child describes the actions of the person. Colours are sometimes noticed as early as 7; but other qualities are not often mentioned until much later. By the age of 8 or 9 the child begins to notice the spatial and even the numerical relations of what he sees in the picture; temporal relations are not noticed until a later stage, and causal relations (as a rule) not until 12 or 13. And only then does the child relate the isolated items, not merely with each other, but with the central motive of the whole, organizing it mentally as a self-contained and rational unity. Thus it is not until the age of thirteen that the child (in Binet's phrase) genuinely "interprets" the picture. Binet thus distinguishes three stages: the infant is an "enumerator"; the junior a "describer" or "relater" (in both senses of the word "relate"); and the senior an "interpreter."

(ii) *Deductive Reasoning.* Reasoning, however, does not depend merely upon the perception of a relation, but upon the perception of relations between relations. This involves a power to analyse out a fairly complex presentation, and to grasp its organization as a system of logically related ideas. What limits the child's ability to reason, therefore, is not so much his inability to apprehend logical relations as his inability to apprehend ideational systems of more than a low degree of complexity. Recent experiments with tests of reasoning in London schools show clearly that, contrary to earlier presuppositions, all the elementary mental mechanisms essential to formal reasoning are present before the child leaves the infants' department, i.e. by the mental age of 7, if not somewhat before.(1) Development consists primarily in an increase in the extent and variety of the subject-matter to which those mechanisms can be applied, and in an increase in the precision and elaboration with which those mechanisms can operate.

I am of opinion, then, that from the age of seven onwards the average child can and should be taught to think scientifically and to argue logically. The only qualification is that the logical steps must be extremely few, rarely more than one or two at the outset, and that the scientific conceptions put before him must be such as he can clearly grasp.

For example, even at the age of 7 (perhaps before), the child is already capable of reasoning about numerical relations so long as the numbers are small and the problems are simple. Hence I would suggest that a good many of the facts which at present are usually memorized in the form of tables should first be presented to the child as discoveries that he himself can make about the nature of numbers; and to some extent he should be encouraged to assist his mechanical memory by reasoning out these facts afresh, as he requires them, instead of relying upon mere parrot-work. At the same time because of their abstract and intellectualistic nature, such exercises should be kept to a minimum.

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(1) These and the foregoing test-problems deliberately deal with non-scholastic topics in order to rule out differences in knowledge or teaching.

Space-relations are more concrete. Embodied in actual objects or diagrams, attention can fix and fasten on them easily; and, even without actual lines or diagrams, such relations can be visualised easily. Hence I would suggest that far more use might be made of simple geometrical reasoning, at any rate, with the nine-year-olds and ten-year-olds. On the other hand, although time is one-dimensional and space is tri-dimensional, problems in time seem more difficult for juniors than equivalent problems expressed in terms of space.

Causation can best be taught in the first instance in terms of mechanical operations, beginning with working models that the child himself operates. The principle of cause and effect has, until late, been singularly neglected in elementary instruction. It will have to be introduced, first of all, in connection with nature study and the physical science of everyday life rather than (as has of late been the tendency) in connection with geography or history. The child's appreciation of temporal sequence, of cause and effect, and his experience of the interactions of human beings in society, are so limited that much that is at present given to him in the shape of history is really beyond his grasp until a later stage. Similarly geography must still be presented to him rather in its descriptive aspects than in its scientific aspects. This does not mean that the child's memory is to be burdened with dates, place-names, geographical facts and historical events, which any intelligent adult would search for in a book of reference, not in his own memory. At present the aim is to fill his imagination with ideas, not his memory with facts, and above all to enable him to see the world around with an understanding eye. History, geography, nature study, and informational subjects generally, should start from the concrete things of daily life with which the child is already familiar.

(iii) *Inductive Reasoning.* Because it is usually a more concrete form of reasoning, induction is often easier for the child than deduction. Beyond a doubt, far more use of it should be made in education; and the child should be taught to apply it to problems of everyday life. Inductive reasoning (including reasoning by elimination of alternative hypotheses) is well within the child's grasp even at the early age of 8.

(iv) *Logical Criticism.* So far I have discussed what might be termed constructive reasoning. Contrary to what might be anticipated, destructive or critical reasoning develops later in the child than constructive. The detection of "absurdities" does not appear in Binet's scale of tests until the age of 11. Thus it is not until after the close of the junior period that a boy can point out the inconsequence of short statements like the following: "I have three brothers, Jack, Tom, and myself." "I know an easy road to town which is downhill all the way there and downhill all the way back." Teachers will be greatly surprised if they put this problem to their pupils: "Captain Cook made three voyages round the world. In one of these voyages he was killed by savages. Which voyage was it—the first, the second, or the third?" Dr. Ballard, who has widely applied this test-problem, points out that, even at the age of 13, 40 per cent. of the children fail to give the right answer (of course, with a sufficient explanation to show that the answer is not a blind guess).[1]

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[1] P. B. Ballard, *Group Tests of Intelligence*, page 47.

Careful testing shows that a few of the simplest logical fallacies (such as illicit process, undistributed middle, petitio principii) can be detected even by the age of 8 or 9, provided the instances are sufficiently glaring or the children have had a little practice. Certainly, both boys and girls will gain amusement and profit from critical exercises on what, to an educated adult, would seem patent non-sequiturs. But until he reaches the senior age the average child remains quite blind to the more subtle forms of fallacious reasoning.(1) Indeed, at this age, the majority of appeals to reason which parents and teachers are so constantly making (e.g. in their ethical arguments) leave the child quite unaffected intellectually or else provoke quibbles and sophistications of whose fallacy the child is unaware.(2)

III.—EMOTIONAL DEVELOPMENT.

In the past both our psychological theories and our educational practice have been excessively intellectualistic. Intellectual processes will seldom function to their full capacity unless there is an emotional incentive behind them. The child never works so well as when he is enthusiastically interested. Thus one of the most important groups of characteristics which the teacher must take into account are the child's own natural interests. How do children's interests differ from age to age? Are there any predominant interests which are specifically characteristic of the junior period? Are there other interests which have either died out or have not yet emerged, and to which, therefore, an appeal will be made in vain? And how can the child's spontaneous interests be made the basis and the motive for the higher interests which the child would not achieve without the teacher's aid?

In man certain interests seem to be universal, common to the race, and inherited by each individual; and, since they are not all present at birth, the psychologist has assumed that these interests mature, in a fixed order and at fairly definite dates, as a result of the natural growth of the mind.

The simplest theory propounded explaining the nature and appearance of these spontaneous interests is the theory of human instincts. The popular view is that animals are guided by instincts instead of reason; and that man is guided by reason instead of instincts. The evolutionary psychology of to-day believes that man has received from his primitive ancestors instinctive tendencies similar to those inherited by all the higher mammals and adapted primarily for wild life in a pre-civilised condition. Thus the interests which appear spontaneously in the child result from the ripening of certain inborn nervous mechanisms within the brain, not unlike the mechanisms which subserve the simple reflex actions, but far more rich and complicated.

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(1) See the investigation on the *Development of Reasoning in School Children* quoted above for details as to the ages at which logical fallacies can usually be detected (*loc. cit.* page 15).

(2) Mrs. Susan Isaacs' recent volume on *Intellectual Growth in Young Children* (1930) is full of suggestive observations and inferences, made by a most cautious and well-informed observer, and is equally rich in instructive ideas for the education of young children at these earlier stages.

This theory has been most fully expounded by McDougall. McDougall and those who follow him point out that an instinct must include, not merely an innate tendency to carry out certain coordinated actions (chasing, attacking, running away, and the like), but also an innate tendency to perceive and pay attention to objects or situations of particular kinds—the natural prey or food of the species, its natural foes, its defenceless offspring, the opposite sex, etc., etc. Further, attention to the object is heightened, and the ensuing action rendered more vigorous, by the fact that every instinct, when excited, releases a fund of emotion.

The lists of human instincts, with their correlated emotions, vary from one author to another. Those most commonly given are the following: feeding; sorrow and crying; joy with smiling and laughter; fear and the instinct of escape; anger and the fighting instinct; tenderness (or love) and the protective (or parental) instinct; the herd instinct and the social feelings; self-assertion (pride) and the instinct to domineer or lead; self-submission (humility) and the instinct to accept a lead; the hunting, wandering, acquisitive, and constructive instincts; curiosity and the instinct of investigation; disgust and the instinct of aversion; and finally the sex-instinct. In their simpler forms a large number of these instincts, together with the corresponding emotions, appear very soon after birth—for example, feeding and crying out; others, like the sex instinct, do not ripen until a much later date.(1)

Many investigations have been undertaken to discover what are the natural stimuli for these primitive interests and what is the mode and time of their manifestation. The favourite method of inquiry (not a very reliable one) has been the questionnaire.

Originally the aim of these inquiries was to discover the age at which every interest first appears. First appearance, however, turns out to be a very elusive point. Accordingly, subsequent investigators have looked chiefly at the age when the interest rises to its maximum. Yet it is doubtful whether even this is an easier point to ascertain. The more trustworthy curves show no sharp peaks; and, in the whole series

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(1) It should be noted that the experiments of the behaviourist school and the inquiries of the psychoanalytic school indicate that the doctrine of instincts, as here briefly summarized, is probably an over-simplification of the facts. The behaviourists point out that the commoner tendencies of older children, as actually manifested in everyday life, are a complex collection of miscellaneous reactions, due largely to tradition, social influence, and habit; the psychoanalysts believe that the child's ultimate interests are, more or less unconsciously, the outgrowth of extremely primitive physiological interests, dominant in infancy, with which the superficial observer might never think of connecting them. There is much truth in these contentions. Hence the several instincts as here enumerated must not be viewed as isolated and unitary functions, corresponding on the emotional side of the mind to the old-fashioned "faculties" on the intellectual. They are to be regarded rather as "specific factors," analogous to the "specific abilities" discussed above, and assumed in order to explain why the correlations between certain elementary activities are far closer than between others. Probably, on the character side as on the intellectual side, the solution of the entire problem of fundamental factors will be largely reached by the application of statistical analysis. To disentangle the genuinely innate from the acquired factors will be a harder question, perhaps of little more than academic interest.

of inquiries, one of the most striking results is the continuity of mental development. On the emotional side as on the intellectual, there are no sudden breaks and no abrupt transitions.

Thanks to the results so far collected, a fairly definite sequence is undoubtedly discernible in many of the commoner interests shown by children as they grow up from babyhood to maturity. Psychologists have imagined a parallel between the order in which such interests develop in the individual and the order in which they have appeared during the evolution of the race. This theory of parallelism is an extension of the recapitulation theory described above. From this wider generalisation many have ventured to fill in the gaps, deducing the missing details from the general course of civilisation, and often omitting to verify the deduction by direct observation or experiment on the child himself. And then, in accordance with this theory, they have suggested that the curricula should be re-organized, and have prescribed the successive ages at which particular subjects should be introduced and the mode in which those subjects should be presented.

These proposals rest on what is known as the hypothesis of "culture epochs"—a hypothesis applied to education by Herbart and his followers. It assumes that, in the evolution of the race, the successive stages of culture develop, as a result of some intrinsic impulse, everywhere in the same order; and it is argued that the most natural form of education is one which closely follows this order in dealing with the individual child. "Education," says Spencer, "should reproduce in little the history of man's civilisation."(1)

The stages suggested are not unlike those enumerated above in discussing intellectual development.

(i) *Infancy.*

From birth up to the age of about 7 or 8 the development of the child is compared with the gradual evolution of the primates, from the level of the arboreal ape up to that of man of the old stone age.

(a) *Babyhood.* The earliest interests of the tiny babe are, as we have seen, nutritional. For long he is mainly absorbed in the sensations he gets from his own body—particularly during simple physiological processes. But very soon he seeks to make contact with the outside world. Sounds, bright lights, and moving objects around him, early attract his attention. So far as the material world is concerned, he is interested primarily in its simple sensory aspects, and particularly in

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(1) The theory is far older than is popularly supposed. It appears in poets like Goethe, and philosophers like Lessing and Hegel, Rousseau and Comte. The most eminent of living educational psychologists—Professor Thorndike in America, and Professor Godfrey Thomson in this country—are exceedingly dubious about its value. "There seems to be no doubt," writes Professor Thomson, "that boys do have Boy Scout instincts strongly developed. But that is about all that direct observation shows in favour of the Recapitulation Theory." On the other hand, so cautious an anthropologist as Professor C. Read considers that we may even effect a tentative reconstruction of the stages in man's emergence from the beast by observing the spontaneous activites of children. Professor Sir Percy Nunn also considers that the recapitulation theory "though sometimes pressed to extravagant lengths, has considerable validity as an educational principle."

things that he can see, seize, pick up, and convey to the mouth. So far as the social world is concerned, his emotions are primarily concentrated on the few persons that immediately surround him—first of all his mother or nurse, and later on his father, and his brothers and sisters. The early attitude that he develops towards his parents is apt to influence very profoundly his relations with all persons with whom he comes into emotional contact later on—particularly his teachers.

(b) *Infant School Period.* During the infant school period the child's interests have been broadly described as at once general and subjective.(1) As yet the child's activities show but little specialisation, such as would be conferred by definite aims or purposes; his interests in the outer world are personal rather than impersonal, and his inquiries into things always have a tacit relation to himself or his immediate needs. Few if any specialised instincts emerge during this period—at any rate none so well defined as the mechanism for walking or talking during the previous stage, or that for sex-reproduction later on. The only instinctive activity that might be picked out as more characteristic than the rest is curiosity. The child loves to explore cupboards, to pull out drawers, to look inside a watch "to see the wheels go round," to tear things to pieces "to see what happens," to tug wings off flies "to see what they will do"; and he pours out a ceaseless spate of questions.

Left to himself the infant's play shows towards the end of this period the germs of increasing purpose; but the purpose is mainly acquired by imitating adult behaviour, and, to that end, developing make-believe on a vast scale. Collaboration in play begins at about the age of 5; but there is not much genuine co-operation until 7. He plays in the company of others, but he seldom plays *with* others; and the conversation of infants amongst themselves, as Piaget's brilliant studies have shown, evinces little real exchange of thought.(2) The child is as yet too self-centred to take more than a momentary interest in the thoughts and doings of his fellows, except so far as they control or interfere with his own. The first beginnings of cooperative play are shown in such games as those of "families" or "school" played by children (girls more often than boys) towards the beginning of the junior period.

(ii) *Childhood.*

From 7 onwards interests become more objective and more specialised. The child becomes less and less absorbed in his personal sensations and movements as such; his attention is attracted more and more by definite objects, by particular occupations, and by specific branches of knowledge, and by problems of activity increasingly restricted and defined. In noting the spontaneous play of children at this stage many observers have thought that they detected the emergence of definite instincts surviving from prehistoric times.

During the transition from the previous period to the present, one or two special types of game become exceedingly common. Just before

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(1) See Nagy, Die Entwicklung des Interesses; *Zeitschrift für experimentelle Pädagogie, V*; 1907. Also Stern, *Psychology of Early Childhood*, 1927.

(2) See *The Language and Thought of the Child* (1926), esp. page 73.

the age of 7, games of making houses and of hiding come rapidly to a climax; and this is supposed to correspond to the stage of the cave-dwellers. Soon after 7 (or perhaps a little before) playing with dolls appears to reach a climax; and this in turn is supposed to correspond, in the history of the race, with the beginnings of organized family life.

By the age of 8, however, the more babyish games of mimicking adults, making houses, and nursing dolls, are already beginning rapidly to decline. The recapitulationists assume that this marks an intrinsic advance towards a new stage of life. More probably the promotion from the infants' school to the upper school makes the child ashamed of infantile forms of play.

The more primitive interests, however, should not be repressed too suddenly. Instead of being abruptly swept away, they may well be elaborated and developed; and the energy underlying them made to provide enthusiasm for matters more advanced. Questioning, for example, should not be suppressed, but positively encouraged. Curiosity is the one instinct which directly stimulates the desire for knowledge; hence to repress spontaneous curiosity is the most foolish form of discipline an educator can practise. The doll, instead of being ridiculed as a babyish toy, may be converted into a model infant; and the growing girl taught the elements of mothercraft in a concrete and practical fashion. Fifty years ago a toy engine (usually a wooden imitation pulled on a string) was a thing every self-respecting boy of 10 would scorn; but nowadays good small working models of railways, submarines, and aeroplanes can be procured; and will not only fascinate the 10-year-old, but serve as the channel for discovering valuable principles of physics and mechanics. "Educative toys" and "didactic apparatus" (called, let us hope, by some other name) may be devised by ingenious teachers to illustrate the working of scientific principles of every kind: and will lead on to a taste for books on inventions and discoveries—books, as we shall see in a moment, which may easily take the favourite place with the bright boy of 10 or upwards.

At this stage one widely spreading interest now comes rapidly and remarkably to the fore, and remains one of the most characteristic features of the whole period. This is the interest in making things. It has all the characteristics of an instinctive urge.

About constructive activities little is said in the questionnaire collected by Stanley Hall and his school. But in the replies that I have obtained for London children, "making things" is reported as one of the commonest forms of recreation at every year from the age of 9 to 12. It is undoubtedly an instinct that might well be exploited, even more freely than at present, by the teacher and the syllabus of the junior school. It should not be limited to an occasional lesson in handwork, but pervade almost the whole of the time-table.

From 7 on to puberty the thorough-going recapitulationists distinguish four successive phases which roughly correspond with the four stages in the scheme set out above. These they term, somewhat fancifully, the hunting, the pastoral, the agricultural, and the commercial phases, respectively.[1] Unfortunately, the actual facts collected by this group

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[1] The clearest formulation of these phases is that of W. Hutchison, a pupil of Stanley Hall. For a discussion of his views, see Varendonck, *Archives de Psych.*, VII, p. 381.

of psychologists do not precisely fit the order which they have thus laid down. But undoubtedly, during the first of these periods—the junior period—many of the games of the young child resemble the occupations of primitive man during the hunting and combative epochs, while the games of the senior and adolescent stages are suggestive of the more serious occupations of agricultural or commercial communities with their more elaborate social organisations.

(a) *Junior Stage.* If the infant stage is the period of solitary play, and the senior and adolescent stage the period of gregarious play, the intervening epoch—the junior stage—is the period of individualistic play. The child still does not, strictly speaking, play *with* others; he plays *against* others. Games of chase, which later on turn into enterprises of depredation, are a prominent feature at this age, particularly with boys. Anything that increases his speed is welcomed: flying by on a scooter, dashing off on roller-skates, and (when parents and roads permit) coasting at top speed on a fairy-cycle, will occupy the child for hours. Throwing things, aiming things, and above all games with balls, begin to be well-marked activities. The country lad goes off fishing in streams, climbing trees for apples and nuts, knocking down conkers, and rifling birdnests for eggs. All this is presumed to correspond to the hunting stage of primitive life.

Presently, competitive games come strongly to the fore; and the spirit of rivalry and emulation—beating one's own record as well as one's neighbour's—might even be at times exploited as a wholesome incentive in the classroom. Towards the age of 10 the pugnacious impulses grow stronger and stronger: wrestling, boxing, fighting become more and more frequent; and the child is now supposed to advance to the stage of the warlike tribes. Games of "King of the Castle," Redskin raids, mimic combats with sticks and toy pistols, usher in this phase; and now is the age when stories and films of fights and all forms of adventure have the strongest appeal. Well-told stories of great heroes, of hand to hand combats, and later on of battles by land and sea and the bravery of explorers and discoverers, can serve to interest the child in some of the more dramatic events and personages of history.

With the girls the pugnacious instincts are less violent; and the maternal instinct remains well to the fore. Girls are fond of stories where children themselves are the heroes or even the victims, though the modern young girl is secretly growing more and more to relish the typical boy's story. In girls the self-assertive instincts tend to show themselves in a different way. They love to dress up, pose before an audience, dance, and recite. These histrionic tendencies can be exploited to illustrate both history and literature. Already dramatic performances figure as solemn events in many senior schools; but even at an early stage, and in the form of hastily improvised "scenettes," they might be introduced on a less pretentious scale in the junior classroom. Possibly it is code and tradition, quite as much as lack of aptitude among the boys, that prevent this form of the instinct of self-display being so manifest in the male sex.

Towards the age of 9 the child takes more and more to outdoor life. He is still a restless, active creature; but owing to his increasing strength, size, and independence, he demands—and should be given—a wider radius of movement. Wandering and truancy are the commonest delinquencies. Here the migratory instinct is supposed to be developing

and the child is said to be advancing towards the stage of the pastoral nomads. I fancy that the statistical increase in truancy and wandering at this stage is due mainly to the fact that, after the boy leaves the infants' school, the mother no longer considers it necessary to escort him to and from school or to shut him up indoors. Undoubtedly, however, the child now seeks to explore his concrete environment further afield. Hence he will be interested in the topography of his own immediate neighbourhood ; and love expeditions to places of interest. If geography were treated as a kind of imaginary tour undertaken by the child himself, and if emphasis were laid not only on the strange peoples that he would meet but also upon the strange plants and fruits and animals, then the geography lesson, instead of being one of the most unpopular, might become, at any rate with the boys, almost the favourite.

(i) *The Junior Child's Interests as shown by his Spontaneous Handwork.* These new interests are largely reflected in the special constructive activities to which the child takes at this period. As shown by the pastimes of the country child, much that the boy, left to himself, would make at this period would consist of tools and weapons to aid him in his hunting enterprises and games of combat—bows and arrows, popguns, catapults, fishing-tackle, and the like. The town boy makes a wooden sword and defends his dug-out in the sandpit, or constructs a wigwam out of sacking and plays Indians and cowboys—the details all borrowed from the local cinema ; or else he goes off to the nearest canal with a home-made butterfly net and a jam-jar to catch minnows.

But even in the earliest years of this period the constructive tendencies exist for their own satisfaction as well as to satisfy these more aggressive interests. To some extent this interest in making things emerges first of all as a result of the development of the child's finer muscular control. He is now able to handle small tools—a pocket-knife, or hammer and nails, and later the needle and the brush or pencil. But even so, occupations of this sort are something more than mere manual activity. An emotional zest accompanies them. The interest is not yet centred in the acquirement or the display of delicate skill : that arrives later ; and to expect it now is a common mistake of the junior school. The child's present satisfaction comes definitely from being a maker and creator of something new, something which is his own. The favourite materials are modelling-clay at the beginning of the period (or, failing that, simple sand or mud), and later cardboard, scissors, wood, tintacks, and presently, if he can procure it, a saw. At the outset he is still a little too restless to concentrate on lengthy constructions ; but at nine or ten many will spend whole winter evenings and long rainy days in building churches with toy-bricks or constructing cranes with meccano sets.

The value of handwork as such is now sufficiently realized ; but teachers are still prone to impose upon the child a logically graded syllabus whereby the junior is expected to begin by learning the qualities of materials and a technical dexterity with tools. Thus the child is required to make humble but useful domestic articles—mats, brackets, soapboxes, or trays—things which appeal more to his parents than to himself and in which the great aim is accuracy and finish on an unambitious scale. I would suggest, on the contrary, that the selection of work should be guided far more by what the child wants to make than

by what the teacher would like him to make, and that constructional work should be employed far more freely to illustrate the informational subjects of the curriculum—geography, history, literature, and science. The house-building interest, for example, can be used in making models of dwellings typical of different epochs or countries—from a log-cabin built of twigs to a Norman castle cut out in cardboard and painted. Every boy of nine loves to pull the kitchen clock and the electric bell to pieces; and is almost as eager to put these simple mechanisms together to make them work. By home-made models he can learn the construction of locomotives, looms, and revolving lighthouses, and later the more important principles of mechanics, engineering, and magnetism and electricity in their simpler applications. All through, things that will move or aid movement—railway signals, scooters, sugarboxes on perambulator wheels—these, however roughly made, fascinate him far more than a stolid stationary bracket or a soapbox with the neatest of joints and the smoothest of planed surfaces. A working model of a pile-driver, that he has himself designed and constructed, will please him and teach him far more than a picture-frame or a tea-tray constructed to a printed pattern.

Soon he will begin to appreciate the importance of measurement, and later on the advantage of making a preliminary design or plan. This will lead on to the incidental teaching of much valuable knowledge in arithmetic and geometry. I would suggest the introduction of this type of work into girls' schools as well as into boys', and would certainly postpone the age at which the girl begins to knit and particularly to sew: towards the end of the period, girls—and boys, too—can make simple and wearable clothes—aprons, overalls, and even knitted jerseys; but once more anything demanding much fine work or prolonged application should be out of the question before the age of 9½ or 10.

(ii) *The Junior Child's Interests as shown by his Spontaneous Drawing.* Under the general heading of constructive work I include spontaneous drawing. An examination of children's drawings year by year will show that from the age of 8 to 11 there is a remarkable improvement in the young draughtsman's skill. After this period and during adolescence, appreciation becomes more marked than execution, criticism than construction. The child then grows shy about his own creative efforts. Drawing ability declines; and the child is content to remain more of a learner than of a maker. But now he shows that he is not in the least ashamed of his crude efforts with chalk, pencil, or paint-brush.

The child's spontaneous drawings vividly display what appeals to him most in this direction; and should be the chief basis in selecting subjects for the drawing lesson. During the junior period, at any rate among English children, the favourite subject is always the human figure: 80 per cent. of their drawings are drawings of men. In a set of drawings made by Indian children and collected for me by one of my Hindoo students, I find animals almost as prominent as human beings. In the Londoner's drawings, animals appear in only 16 per cent. Next to these two subjects come mechanical vehicles—ships, buses, and trams. Indeed, these threaten to oust animals from drawings almost entirely as they have ousted them from the modern street. With

girls, flowers form a favourite subject: household furniture, and, of course, designs for dresses, interest them almost as much, particularly towards the later ages.

Colour fascinates the small child. Every youngster should have his own crayons and paints, and approach drawing in this way. They love shutting their eyes and drawing the colour-schemes which the retina's own activity provides. Quite early, a child will amuse himself by inventing complicated patterns, that grow under his hand as he plays with pencil or with colour. To the adult this looks a dull occupation; but to the child it is often fascinating. It may help to cultivate his decorative tastes, his feeling for harmony of tint, and an interest in geometrical design.

The child's interest in the human figure should be given much freer scope for expression in school. Teachers, unlike the modern artist, are still possessed by the notion that all good drawing and painting aim at the realism of a photograph: hence, if a child cannot make his subject lifelike, they consider it to be above his head. There is, however, no reason, either aesthetic or educational, why the child should not be allowed to pursue his own quaint symbolic and schematic inclinations. The absence of proportion and perspective that we accept in the primitives or the post-impressionists need not shock us in the productions of the child. If encouraged, the child can produce the most vigorous drawings of action and incident by simply manipulating what is sometimes called the matchstick figure, where a blob serves for the head, a line for the trunk, and angles for the arms and legs. Up to the age of 9, the child is impelled to draw, not for the purpose of representing what he sees, but for the purpose of expressing his knowledge and his feelings. He should be encouraged to realize on paper his mental images of the subjects, places, or incidents he hears of in history, geography, or nature-study. Indeed, the talks and stories on these subjects should lead up to self-contained items which the child can illustrate in this way. And, by getting the child to draw visible things that appeal to him, like flowers or animals, observation may be improved, and the foundations laid for scientific instruction in such subjects as botany and biology.

The interest in the human figure might also be used in handwork. The child is not to be expected to make life-like dolls, but will enjoy putting together working puppets out of jointed strips of cardboard or wood. Little figures of this sort will give a great deal of animation to his various constructions—his model village or soldiers' camp—and may lead on to a knowledge of the mechanical principles of human anatomy. Towards the age of 10, my returns show a curiously wide interest in the toy theatre, usually home-made; and the equipment of such toy theatres—uniting both handwork and drawing—might serve to illustrate much in history, geography, and literature.

(iii) *The Junior Child's Interests as revealed by his Spontaneous Reading.* Another favourite method of studying children's interests has been to inquire into their preferences in reading. What do they like to read best, or, if too young to read for themselves, what do they like to have read to them? At the outset, and particularly when read to, tiny children are fond of simple poetry, beginning with nursery rhymes,

and advancing to poems that are short and easy but less childish. All through the junior stage girls show a greater interest in poetry than boys ; by the age of 9 the boy's interests in reading, as in other directions, grow more and more matter of fact.

Earlier investigations suggested that the favourite literature of the small child consists of fairy stories. Children's tastes have perhaps changed a little. Fairy stories still appeal to little girls ; but, among small boys, stories about animals seem now to take precedence, at any rate after the age of 8. All through the junior period both sexes show an intense interest in animals. Boys, however, prefer to hear about wild beasts, big-game hunting in Africa, or escapes from wolves in snow-clad Russia ; girls prefer tales about domestic animals and pets. After the fairy stage comes an interest in folklore and legends ; and towards the age of 10 adventure begins to dominate particularly with the boy. He must have excitement—copious incidents and a hero. Tales of rough horseplay and wild escapades have a strong appeal; and what is comical or crudely humourous attracts the boy far more strongly than the girl. For boys the events must be realistic ; but they care little for style. Sentiment has for them far less attraction than for girls.

Adventure stories lead on to an interest in travel and biography ; and towards the end of the junior period, the brighter boys show an increasing interest in books on history and science. This remains characteristic of the senior period. Girls, however, still show a predominating preference for fiction. At every stage of the junior period there are a number of girls who prefer stories about children to stories about adults, especially if the heroine is a girl. They like narratives about domestic life, and do not revolt, as boys often do, against stories written by women.

(iv) *The Junior Child's Interests as revealed by his Preferences for different School Subjects.* From the age of 7 onwards children show marked likings and dislike for different subjects of the elementary curriculum ; and both favourites and aversions alter from year to year. I have obtained orders of preference from boys and girls separately at each successive year of their elementary school life. One child, of course, differs appreciably from another in his predilections ; but the average order may be taken as representative of a given group as a whole. The orders for the ages of 7, 10, and 13 are given below(1).

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(1) It should be observed that the names that I have used for the different subjects are a little arbitrary, and refer rather to topics than distinctive lessons. Their meaning will be sufficiently obvious to the teacher, though, of course " hand-work " is different for boys and girls respectively, and " literature " means different things at the age of 7 and at the age of 13. But for the sake of compactness and comparison I have kept the same headings for either sex and every age. Needless to say, the mode in which a given subject is taught may make all the difference between a high position and a low position in the total series. Similar studies of children's preferences have been made by various investigators in different countries ; and the order tallies pretty closely with that found in London.

ORDER OF PREFERENCE FOR THE CHIEF SUBJECTS OF THE ELEMENTARY SCHOOL CURRICULUM.

Age.	7		10		13	
	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.
Subject:						
Singing ..	1	2	4	1	9	7
Dancing ..	4	1	11	2	12	1
Drill ..	5	12	6	11	7	10
Drawing ..	3	3	2	3	3	6
Handwork ..	2	4	1	4	1	4
Reading ..	11	8	8	6	6	2
Spelling ..	12	11	13	9	14	13
Grammar ..	15	15	14	15	13	14
Composition	13	10	12	8	8	3
Literature ..	8	6	10	7	10	5
Arithmetic ..	7	13	9	14	11	15
History ..	10	7	7	10	4	9
Geography ..	14	14	5	13	5	12
Nature Study	6	5	3	5	2	8
Scripture ..	9	9	15	12	15	11

It will be seen at once that there are distinct changes from one stage to the next, and that these changes are to a large extent what would be expected from the descriptions here given of the child's chief interests at each successive stage. Girls, too, diverge appreciably from boys; and the divergence increases in the later years. The more active subjects, particularly those that give scope for constructive work—handwork, drawing, singing, and dancing (with the girls)—are the prime favourites. Nature study and geography (among the boys) come next. Reading, which during the stage of mechanical acquirement ranks low, is now moving to a higher place, and carrying literature and composition with it. Abstract or formal subjects, like grammar, spelling, and arithmetic, are heartily disliked—though boys are now taking better to arithmetic and girls are rapidly mastering the difficulties of spelling. A literary bias among the girls and a scientific bias among the boys is already discernible.

The psychologist is tempted to suggest that, particularly during the early years of this period, a far larger space in the time-table should be given to the favourite subjects, and that the unfavoured subjects should largely be taught through the medium of the former.

With the later periods of school life we are not here concerned. A few words are needed to complete the picture of the child's evolution; and one or two points may be noted to contrast the undeveloped junior with the older youth, and to indicate the level towards which the child is moving as he leaves the junior stage.

(b) *The Senior Period.* About the age of 10 or 11, it is said, the instinct for acquisition and the passion for collecting things rise to their height. This is supposed to correspond to the late epoch in human civilisation, when man settles down into social life, acquires property, and eventually passes to a commercial stage. I myself should put all these features in the child at a somewhat earlier date. In any case, the tendencies which are said to reach a climax at between 10 and 12, are undoubtedly fairly

strong in the junior child ; and his love of collecting and owning might well be exploited in the classroom. Indeed, the sense of ownership and a respect for the possessions of others can and should be cultivated from the outset, even during early infancy.

(iii) *Adolescence.*

Puberty and adolescence are essentially marked by the ripening of the sex instinct. It is a popular notion that now for the first time sex interests become suddenly active in boy and girl. Adolescence, however, simply marks an acceleration and a culmination-point in tendencies that have been existent, in immature or latent form, from early infancy and throughout the junior and senior periods. With this fundamental change come others, often so striking and so novel, that many psychologists have considered them to mark a fresh burst of evolution in the history of the race. There is in particular a marked intensification of the emotional life, leading first to a general instability, and then to new aesthetic susceptibilities and a new moral earnestness. Now, too, both sexes show a great interest in other persons than themselves. There is a remarkable increase in social feeling. Boys and girls alike become gregarious. They form cliques and gangs ; and willingly enrol as members of clubs or juvenile societies. The favourite games are team-games. All this is supposed to mark the emergence of the herd instinct, and to correspond with the final evolution of organised social communities.

With this increased social intercourse and this increasing interest in others, goes a heightened consciousness of self. The child becomes sensitive about himself, thinks about himself, and forms an ideal for himself. As a result, too, he begins to acquire definite purposes which he regards as specifically his own. He forms ambitions ; and decides to devote himself to certain aims or studies and not to others. He specialises. It will be noted, however, that in one or two respects, the recapitulation theory here breaks down. In the child, as contrasted with the race, the so-called commercial interests seem to show themselves before the social interests ; and the sex-instinct, which is one of the earliest to appear in the course of evolution (long before the maternal instinct or even the sucking instinct), is about the last to ripen in the individual.

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