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NEW ZEALAND.

MANUAL TRAINING IN PRIMARY SCHOOLS

(PAPERS IN REFERENCE TO).

Laid on the Table by the Hon. Mr. Hall-Jones, with the leave of the House.

A.—REPORT BY J. STRUTHERS, ESQ., ONE OF HER MAJESTY'S INSPECTORS OF SCHOOLS IN SCOTLAND, ON SLOYD AND KINDERGARTEN OCCUPATIONS IN THE ELEMENTARY SCHOOL.

SIR,— March, 1895.

At your request, I submit, for the consideration of their Lordships, the following observations on a department of school work which has now received a considerable development in the schools of the Edinburgh district. I do not propose to enter into a description of the various occupations, but shall aim only at giving such an account of the purpose, method, and results of this kind of teaching as shall enable a judgment to be formed as to whether its further extension in these schools and its introduction into others is desirable.

First, a word as to the term "sloyd" and its connection with kindergarten occupations. Sloyd is the pronunciation naturally given by English-speaking people to the Swedish word *slöjd*, which means "skill or dexterity of hand."* In its general sense the word may be applied to any system of instruction which aims at giving increased dexterity of hand to children, whatever the ulterior object may be. But in Sweden the word has also acquired a special sense. It is applied to certain systems of working in wood, iron, or other material, carefully thought out and widely practised in the schools of that country, which aim not so much at developing dexterity of hand, though that result is not in itself unimportant, as at making manual instruction *contribute towards the general education of the pupil.* Well-arranged and properly-conducted work of this kind—the qualifications are most important—is regarded as a very valuable, in some respects the most valuable, means available to the teacher of developing in the pupil such qualities as intelligence, practical judgment, exactness, perseverance, taste, power of initiative, individuality.

Of these systems the typical one, of which the others are mainly modifications or developments, is the system of woodwork taught in the Sloyd-Seminarium at Nääs, near Gothenburg. That school, presided over by Herr Otto Salomon, one of the most remarkable men in the educational world of to-day, has existed since 1872, and the system of woodwork taught there has been gradually elaborated and constantly revised in the light of the experience of the numerous teachers engaged in teaching it in elementary schools. To the institution at Nääs teachers from all parts of Sweden are sent to be trained in this part of their work. There they have an opportunity of acquiring the requisite technical skill, and they are at the same time instructed in the principles which underlie the system by means of lectures and discussions full of rich suggestiveness as to the whole field of education. Teachers from other countries also are admitted to certain of the courses, and receive instruction free of charge. They come from every country in Europe, from both the Old and the New World—even from Japan. Among them have been not a few teachers from both England and Scotland.

Into the distinctive features of the system—the use of the knife as an introductory tool, the making of completed models combining several exercises as against the practice of exercises separately, the use of curved and moulded forms not belonging to pure carpentry—I do not propose to enter. What is important to notice here is its main principle—viz., that work of the kind in question is not to be taught as an end in itself, but rather as a means of securing certain valuable results, to wit, those enumerated above. It is, in the director's phrase, "Sloyd in the service of the school," and is to be taught in due relation and subordination to other school studies.

The difference between manual training of this kind and manual training which aims simply at producing in the pupils a certain dexterity of hand which may be useful to them in the industrial occupations of after-life is fundamental, and cannot be too strongly insisted on. The difference of aim naturally leads to an entire difference of method. For example, if technical skill only is aimed at, probably the most effective means of securing it will be the frequent repetition of the same

* Adj. *slög* = skilful or dexterous: cf. Eng. word "sleight" in "sleight of hand."

operation till a certain mechanical knack is acquired; whereas in the other case the pupil will at each stage have, as it were, a new problem set him, the solution of which exercises the intelligence and requires forethought and concentration of mind. I do not at all mean to contrast these two methods of manual training as good and bad respectively. It is conceivable, for instance, that in trade-schools, if such were established, designed as a substitute or partial substitute for an apprenticeship, the former method might be the proper one, but it is entirely out of place in an elementary school. To distinguish these two kinds of manual training it may be convenient to use the term "sloyd," which has no previous connotation in English, to denote that form of manual training in which the educational rather than the technical aim is predominant. In this sense the term "sloyd" will be simply a convenient shorthand expression for *educational manual training*, and I propose so to use it.

We may thus apply the term not only to that system of working in wood which is distinctively known as "sloyd," but to any system of exercises in any material (wood, iron, cardboard, or clay) which can be clearly shown to be educational in its objects and methods. As to the various ordered collections of models and exercises commonly called "systems" or "series," I would deprecate the blindfold adoption or transplanting of any one of them. The circumstances of the school are to be considered. Moreover, as one of the great functions of sloyd is to develop individuality in the pupils, there must be a corresponding individuality on the part of the teacher. He will accomplish better results with a system which he has worked out for himself, and which he thoroughly believes in, than if he were blindly to adopt the best of all possible systems. On the other hand, of course, it would be mere foolishness to refuse to profit where possible by the experience of others.

Let us turn now to the exercises commonly practised in schools under the name of kindergarten occupations. An ardent Froebelian would perhaps say that there is very little of the kindergarten about them, and would doubtless contend for the system and nothing but the system. But the elementary school must take its goods where it finds them, and experience clearly shows that these exercises can be so arranged and conducted in ordinary schools as not merely to afford a welcome relief from other school studies, but to be in themselves a valuable means of education. The general public, I am afraid, and occasionally teachers as well, are apt to regard these occupations as mere amusements, which may be conducted anyhow, and which serve their purpose if they keep the children out of mischief. As a matter of fact, they are, if properly made use of, identical in purpose and effect with the sloyd occupations already referred to, and may be included under the wider designation. They differ only in the greater simplicity of the exercises, in employing a less obstinate material, and in being less susceptible of accuracy and finish. But the educational reasons which justify the introduction of either into schools are precisely the same, and the educational advantages to be reaped from them are the same in kind. Sloyd, as Herr Salomon has expressly recognised, is the application of certain kindergarten principles to the work of the juvenile school; and it would be interesting, were this the place, to trace back step by step the present form of sloyd instruction in Sweden to its origin in the work of Froebel.

It may perhaps serve to give greater concreteness to what I have to say if I now proceed to enumerate a few of the various occupations which I have in view, stating at the same time the stage of school-life to which they seem to be appropriate.

I. There are, first of all, the various kindergarten occupations suitable in various degrees for infant departments or for children under eight. They comprise such operations as the use of the gifts, stick-laying, pea-work, paper-folding and cutting, mat-weaving, basketwork, kindergarten drawing, colouring, and brushwork. It is obvious that some of these are more difficult than others, and are in consequence suitable for different ages; that some of them in themselves admit of a certain amount of gradation; and that there is such a variety of them as to make it unnecessary to repeat the same exercise in successive years, or, indeed, to continue it for a moment after the interest of the children begins to flag. Of these various exercises each infant-school will naturally make its own selection, but in each the exercises selected should be so arranged that there is something like orderly progress from the simpler to the more difficult, while at the same time care is taken to secure due relief and variety.

II. Clay-modelling. This occupation affords exercises of a very wide range. It may be used in rude fashion in comparatively young classes in the infant-school, particularly as a sequel to object-lessons, and it is at the same time capable of delicate and refined manipulations such as will make sufficient demand on the capacities of even the most advanced scholars. In the schools of Paris, for example, it is an exercise for the highest classes. On the whole, it is probably in Standards I., II., and occasionally III., that this occupation can be best turned to account.

III. Cardboard-work, which is capable of, or, rather, demands, the utmost exactness, and yet is within the capacity of the average child in III., IV., and V. This exercise has a special interest for children on account of the usefulness of many of the articles made, and is also most helpful in the teaching of drawing.

IV. Woodwork. This, as admitting of the greatest variety of form and manipulation, and also of the utmost exactness, is probably the sloyd occupation *par excellence*. It is best calculated to secure the immediate result—viz., development of *general* dexterity of hand—and at the same time affords ample field for the exercise of the special sloyd discipline. It is specially suitable for the highest classes.

V. Ironwork, with or without the forge, might be an alternative for the oldest pupils, and I have no doubt that other suitable sloyd occupations exist, or may be invented.

All these, if suitably graduated and properly taught, may be regarded as sloyd occupations, employing the word in the wider sense which I have endeavoured to give it.

In the above list I have made no mention of a very important subject—viz., drawing—which is essentially a sloyd occupation. It develops dexterity of hand in a certain direction, and may at

the same time be made a valuable means of mental discipline. Its connection with other sloyd occupations cannot be too strongly insisted on. A certain power of drawing is a necessary preliminary in the more advanced occupations, and there can be no doubt, on the other hand, that the practice of these occupations reacts beneficially on the teaching of drawing. The opportunity they give for the immediate practical application of drawing is in itself a gain of great importance. Again, several of the occupations—*e.g.*, cardboard-work—enable the pupil to obtain an insight into the meaning of such terms as plan, elevation, and section, such as they could probably obtain in no other way. It may not be unimportant to remark that in the natural order of the development of the faculties power to make a model comes before the power of drawing. The child first endeavours to represent the thing as a whole of three dimensions, however vaguely and crudely, and only afterwards proceeds to abstract some one aspect of it. Accordingly, in the earlier stages the model must be used to interpret the drawing, and not *vice versâ*. It is only at a comparatively advanced stage that the pupil can be expected to work from drawings alone. In view of the intimate connection of drawing with the various manual occupations, it is somewhat unfortunate that these two branches of what is educationally the same subject should in the earlier stages fall to be organized and supervised by two different departments, or that drawing should in such a marked way be separated off from the rest of the work of the school.

Having detailed the various occupations embraced under the head of sloyd, I come now to consider what advantages may be expected to result from making these occupations an integral part of the work of the elementary school.

In the first place, then, we shall thereby make the education of the child more complete, all round, and well balanced. Education aims, or ought to aim, at the harmonious development of the faculties which children possess, especially such of them as are likely to be of value in the work of life. Now, there is a faculty of the hand as well as of the brain—on the intimate connection of these two I shall have a word to say later—and a reasonably complete education will not neglect the development of the former. This view might perhaps be maintained even were these faculties to some extent antagonistic; but it is greatly strengthened if, as I shall try to show, there are grounds, both in theory and experience, for believing that manual training of a certain kind and amount promotes rather than retards advancement in the ordinary subjects. In that case, there is all the more reason for regarding an education which does not include some training of the faculty of the hand as lacking in balance and completeness.

Were this balance and completeness merely a question of doctrinaire symmetry, it would not be worth while insisting upon it; but there is, I think, some justification for the opinion that the predominantly mental or bookish character of much of our common school education has certain practical consequences which are not desirable. That opinion is doubtless often expressed in exaggerated terms, based upon an imperfect acquaintance with the actual work of the schools, but it receives weighty confirmation in the following excerpt from the report of a committee of the London School Board on the subjects and modes of instruction in their schools:—

"The boys who leave school thus early are mainly employed in posts such as that of errand- or shop-boy, in which they learn no skill nor anything to qualify them to follow a trade. Their earnings help their families for a time, but they drift into that mass of unorganized and unskilled labour amongst which, whether employed or unemployed, much misery exists, and which constitutes a dangerous waste of national force."

Of the remedies which this state of things seems to call for, one, the compulsory lengthening of school-life, is a measure of general politics which I cannot here discuss. I may remark, however, in passing, that the operation of the freedom of classification now accorded to schools will in large measure secure the same result. As I have shown elsewhere, it is extremely probable that in a few years about half of the children presented in Standard V. will be over thirteen years of age. With the more leisurely progress thus made, we may reasonably hope to secure a broader treatment of the work of V., and such enhanced efficiency as will make it virtually equivalent to the work of VI. It remains to be seen, however, whether this silent lengthening of the actual period of school-life will be acquiesced in by those most concerned.

The other remedy is a strictly educational one. It is such a broadening and simplification of the school curriculum as shall remove the predisposition which at present exists towards certain kinds of employment. Most emphatically it is not desirable that trades should be taught in schools, but we may at least secure such a well-balanced development of the faculties of the pupils as shall place them in a position of substantially greater freedom in the choice of their life-work when they leave school. Now that the system of free compulsory education has to a very large extent taken it out of the power of parents to determine for themselves what the training of the children shall be, it becomes a matter of the utmost importance to see that that education is free from all bias.

On the direct results of manual training I shall not dwell. Important as they may be, I do not wish to lay any special stress upon them in the present paper, whose object will be mainly to point out some indirect results of greater educational importance.

But manual dexterity, if general in its nature, and not the knack of any one trade, is in itself an acquisition not to be despised. It has a value for all men, but specially, of course, for those of the industrial classes.

If the doctrine, to which I shall have occasion to refer directly, of the development of the motor-centres in the brain be correct, there is reason to believe that the traditional skill which distinguishes certain sections of our manufacturing population—*e.g.*, those engaged in the textile manufactures—can only be fully acquired during what is, properly speaking, school age. It is so acquired at present, because the children in these districts leave school early, or attend only as half-timers, and if school attendance is to be prolonged, as is desirable, some provision must be made in the school itself for the development of power of hand. To certain other classes also, to the dweller in remote country districts, and to the emigrant, this kind of training has an economic value.

Again, it does not seem unreasonable to hope that properly-conducted manual training may do something toward diffusing an appreciation and fostering an ideal of sound workmanship even in the commonest articles. It is of the essence of this kind of work that quality rather than amount should be insisted upon. There is no necessity from the scholastic point of view that the work should be done at all. Hence in what is done the very highest standard of accuracy and finish should be set. It is also important that the reasons for passing or rejecting any piece of work should be made clear to and acquiesced in by the pupil.

At this point, more suitably than elsewhere, I may mention one reason of great weight for the introduction of manual training into schools. If ever any large use is to be made of the Technical Schools Act of 1887, the special work of these schools must to some extent be led up to in the elementary schools of the district concerned, and in no other way could preparation better be made than by a systematic and well-considered course of manual training in conjunction with drawing. The opinion might even be hazarded that a demand for these special schools is likely to arise most naturally and most properly when the kind of instruction referred to has already been carried in the elementary school to the point at which it requires special organization and subdivision, together with a different grouping of subjects.

But, so far as the elementary school is concerned, manual training is to be valued not so much for its direct results, important though these may be, as for its disciplinary effects—that is to say, for the contribution it makes towards the development of character and intelligence.

I have already alluded to the intimate interdependence of hand and brain. That interdependence has long been more or less vaguely recognised, but the recent researches of Ferrier and others have given a new meaning to the phrase. It has been shown that there are in the brain distinct motor-centres, of which those of the hand are specially important; that these motor-centres have a distinct but limited period of growth, extending over, roughly, the period from the fourth to the fifteenth years; that their development depends on adequate exercise of the corresponding muscles *during this period;* that these motor-centres are so intimately connected with other parts of the brain that if they are imperfectly developed there is apt to be a corresponding loss of mental power.

These statements are based upon a pamphlet on "Handcraft," by Sir James Crichton-Browne, from which I now proceed to quote two passages as summing up the whole matter: "It is plain," he says, "that the highest functional activity of these—the motor—centres is a thing to be aimed at, with a view to *general mental power,* as well as with a view to muscular expertness; and as the hand-centres hold a prominent place amongst the motor-centres, and are in relation with an organ which in prehension, in touch, and in a thousand different combinations of movement adds enormously to our intellectual resources, besides enabling us to give almost unlimited expression to our thoughts and sentiments, it is plain that the highest possible functional activity of these hand-centres is of paramount consequence not less to mental grasp than to industrial success."

Again, "Depend upon it that much of the confusion of thought, awkwardness, bashfulness, stutterings, stupidity, and irresolution which we encounter in the world, and even in highly-educated men and women, is dependent on defective or misdirected muscular training, and that the thoughtful and diligent cultivation of this is conducive to breadth of mind as well as to breadth of shoulders."

We have, then, scientific authority in favour of the assumption that development of hand-faculty must in itself have an appreciable effect on the development of the higher mental powers. But even if we lay no stress on the physiological connection, it still remains true that the process of manual training by which hand-faculty is developed affords a particularly favourable field for the exercise and development of what are generally regarded as purely mental faculties. On this point we may appeal to experience. One cannot watch a group of children engaged in one of the more advanced kindergarten occupations requiring individual work without being convinced that the higher faculties of discrimination, selection, practical judgment, and calculation or foresight are being exercised to an unusual degree. Probably there is no single faculty brought into play in the teaching of the ordinary school subjects which is not exercised in an approximately equal degree in manual work.

And when we come to the cardboard-work and the woodwork of the higher standards the case for the intellectual value of manual training is strengthened. In the first place, these exercises admit of a great degree of exactness, and hence their disciplinary value is enhanced. In the second place, the making of each object or model, as it is called, involves a considerable number of operations, a mistake in any one of which is likely from the nature of the material to be fatal. It is not like a drawing or a sum on a slate, where careless work may be effaced by a sponge, and a correction at once made. The pupil *must* look ahead, the nature of the material must be studied, and the effect of each single operation must be calculated. A single false cut, a small deviation from the dimensions given, and the whole work has to be done over again. It is obvious that work of this kind may easily be made the means of developing in the pupil the power of close observation, power of concentrating attention, judgment, foresight, and the habit of painstaking accuracy. These qualities are not named haphazard, but are precisely those which the nature of the work is calculated to develop. It is, again, a valuable peculiarity of this kind of work that the pupil is to a large extent his own judge. A piece of work is wrong not because the teacher says so, but because he himself sees that the thing he is making is not the thing he wants to make. It is difficult to overstate the value of the moral discipline involved in this perception.

Let me add, however, that in order to make manual work of any kind a really efficient mode of intellectual training there must be no mechanical repetition. The pupil must at each stage have a fresh problem presented to him, which shall sustain his interest and call for the exercise of all his faculties. To cause him to repeat the same operation over and over again till he has acquired a certain mechanical knack of doing it is really to do something toward teaching him a trade, but it is not sloyd. The process has little educative value. One cannot get a better idea of what is meant by sloyd than by laying firm hold of this distinction.

But it may be said: Admitting that manual training may be made a valuable means of intellectual education, it is only one among many such means. Do not the subjects at present taught in schools, which we *must* continue to teach, amply suffice for that purpose? Is there any special virtue inherent in manual training that it also should find a place in the school? The answer to this question brings us to what I must consider the central position of the sloyd doctrine. It is that there *is* a special virtue inherent in manual training, and that in two ways. In the first place, it has a unique power of securing and sustaining the interest of the average child; and, secondly, it substitutes for the receptive and passive attitude on the part of the child the active and productive one. The two reasons are intimately connected, and on both points we may appeal to experience.

It is a matter of common observation in those infant-schools where fair trial has been made of kindergarten occupations that in this kind of work the children show an absorption of interest and a concentration of attention such as they do in no other. No ordinary occurrence, such as strangers entering or leaving the room, has power to distract their attention. I have found that when questions are addressed to them individually they usually answer without looking up, and, indeed, almost seem to resent the interruption. This is but the natural consequence of a fact of common observation—viz., that children delight, above all things, in doing something, and specially in making something. They will make mud-pies, or dolls, or ships, or draw impossible men and horses on the wall or on their slate. It is a necessity of their nature; and, if I may be allowed a conjecture, it probably connects itself with the fact already alluded to, that this is the period of the development of the motor-centres in the brain. Now, if, as I have tried to show, this productive activity of children can be turned to account educationally, it is clear that we have here a great source of motive-power in education which is at present largely running to waste in our schools. The restlessness of a healthy child is simply an indication that the reservoir of energy is full and brimming over, and we only need to lead it off by proper channels to secure the most valuable educational results. Every good teacher prefers to rely upon interest rather than upon compulsion as a motive-force in education, and, though it is perhaps too much to expect that every necessary subject of study be made interesting at all times, we cannot afford to exclude from the school programme a subject which has an inherent attraction for children if it has in itself any educational value whatever.

The attractiveness of this subject for children has one important result, of which I must make special mention. Regular attendance at school is an indispensable condition of progress, and if the effect of the inclusion of manual training in the school curriculum is to improve attendance, we may expect better progress to be made in other subjects as well. That it has this effect is not only probable on theoretical grounds, but is found to be the case in practice. "The keen interest of the boys in the class is clearly shown by the rare absence of a boy from school on the day set apart for his lesson." This report of an Edinburgh headmaster to the Board is typical of a pretty general experience.

The other special feature of manual training as a means of general education is that it substitutes the productive for the receptive attitude on the part of the pupil, and so tends to foster individuality. It is a pregnant saying of Froebel's, that "man only understands thoroughly that which he is able to produce." His knowledge must have been elaborated in his own brain, and must bear the stamp of his own personality. It can never be merely transferred from one person to another. Hence the educational maxim, that what the teacher does for a pupil is of no importance compared with what the pupil does for himself. Now, manual work as compared with other school subjects offers a unique field for carrying on this process of self-education. In other subjects results are, and probably must be, all important. We must make sure that the children before leaving school have attained to a certain measure of proficiency in the three Rs, and the methods by which this result is arrived at are, comparatively speaking, of secondary importance. There is consequently a strong temptation to impart knowledge, or the appearance of knowledge, by the shortest methods. In reading, the teacher very commonly gives a model or correct reading before the pupil has made any attempt to master the difficulties of the passage for himself. I believe that in certain text-books it is even laid down that this is the correct method of procedure. In arithmetic, the pupil is at once furnished with a rule for working certain types of sums before he has made any attempt to construct a rule for himself, and so on. Imitation and memory are relied upon to the detriment of more important faculties. Probably these short methods are not in the long-run most effectual in securing their object, but so long as the result, apart from the method, is regarded as the all-important point, there is the strongest temptation to use them.

Furthermore, in teaching class-subjects to large classes such as are too common in our town schools, the most skilful teacher cannot insure that each individual pupil is really performing the mental operation necessary to make the instruction given part and parcel of his mental fibre. With apparently perfect attention the mind may be completely passive. Even genuine attention is not enough. The pupil, if he is to permanently benefit, must actively take hold of the facts presented, restate them in his own way, and correlate them with other facts of his experience. Under the usual conditions of class-teaching this cannot be done. I do not hesitate to say that the continued teaching of children in large classes, where no opportunity can be given for the frequent individual reproduction—I do not mean repetition from memory—of what has been learned, has a deadening and paralysing effect upon their faculties. Much of the apparent result is delusive, and the time spent upon it is to a great extent wasted.

Let us turn now to manual work. There the result—the object made or the manual dexterity acquired—though in itself valuable, is of no importance compared with the educative process which the pupil passes through in attaining the result. The public do not demand a certain amount of manual dexterity in the pupil who leaves school in the same way as they demand a presumption of proficiency in the three Rs. Nor is it likely that they ever will. There is no necessity to obtain a certain result anyhow, and we are consequently at liberty to arrange our work, and to conduct it in such a manner as to obtain the best educational effects from the process. In public-school

education, as regards its main subjects, there must always, I suppose, be more or less of a compromise between educational principle and considerations of immediate utility. But here is a department of school work into which these considerations need not enter, and accordingly, strange as it may seem, it is precisely in this subject of manual training, of all others, that we may hope to see educational principle most fully exemplified.

To accomplish this certain conditions must be fulfilled, of which I shall mention only the most important:—

(1.) It will be necessary that the pupil be as far as possible his own teacher, and the work he does in every sense his own. The teacher must to a great extent efface himself, and while giving general direction to the work, and information and advice where needed, he must be careful to avoid premature help. On no account must he do any part of the work of the actual model on which the pupil is engaged.

(2.) It will be further necessary that the work be of such a nature as to secure the interest of the pupil, but I have already given reasons for believing that this will be an easy task.

(3.) The nature of the work must correspond to the age and strength of the children.

(4.) It should be so graduated that at each stage the pupil will have fresh difficulties to encounter, for which, however, his previous experience should have in some degree prepared him. It is very largely on this point of graduation that the merit of one system as compared with another depends.

(5.) At each stage, according to the capacity of the children, a higher and higher standard of accuracy must be set, otherwise the work will lose much of its disciplinary effect.

(6.) There must be no attempt at class-teaching in the ordinary sense. Each pupil must be allowed to advance at his own natural rate of progress. The slow must not be unduly impressed, nor the smart kept marking time.

(7.) Lastly, I would urge very strongly that teaching of this kind should never be regarded as an end in itself, but should always be considered in its effects direct or indirect on other school studies. The place it occupies in the school curriculum, and the manner of teaching it, may very well be taken into account in forming a general estimate of the work of a school, but it is not desirable that it should be made the subject of a *special* grant. For with the special grant emphasis would naturally be laid upon the visible and tangible result, the amount of work done, rather than on the disciplinary effect, or its due relation to other school studies.

If the conditions I have enumerated are fulfilled, we might expect manual training—or, as it would be in that case, sloyd—to develop in the pupils an individuality, an independence, and a self-reliance which would be most valuable correctives of the evil effects of class-teaching, while it would at the same time exercise their mental faculties in a degree little inferior to other school studies, and in a more concrete and practical way.

Let me now put in summary form the advantages which might be expected to result from making sloyd—or manual training conducted in the way and under the conditions just mentioned—an integral part of the curriculum of the elementary school.

We should secure a direct result valuable in itself—viz., increased dexterity of hand in children, in greater or less measure, according to the time spent upon it. But we should secure an indirect result of still greater importance, inasmuch as we should turn to educational account a great natural force, the interest which children have in making things, and cause it to contribute toward their *intellectual* education, and specially toward the development of certain qualities of mind and character which should go some way to counteract the evil effects of class-teaching. And in securing these results we should at the same time be acting in the interests of a complete and well-balanced education.

I turn now to the practical question of its introduction into schools. First, let me state explicitly, what I hope has been sufficiently implied in the preceding remarks, that the measure of the introduction of manual work into schools must be the measure in which it conduces to increased efficiency in the general work of the school, and specially in the standard subjects. It is, I think, well understood in the schools of this district that no amount of extra work of this kind can compensate for deficiencies in the fundamental subjects. Having regard to this general condition, can we say that there is room for the additional subject in the school time-table? That is a question which experience alone can answer. But in the schools of this district, and particularly in the schools under the Edinburgh Board, there has been gradually accumulated a fund of experience which enables a pretty decisive answer to be given as regards certain stages of the school, at all events. It will be convenient to consider the case of the infant-school and of the juvenile school separately.

I. Infant departments (including Standard I.): As regards these, the difficulty of the time-table has been amply, I may say, brilliantly solved. During the last four or five years the serious treatment of kindergarten occupations has spread from a very few schools to practically every school of any size in the district. The time devoted to work of this kind has gradually increased. In some schools, and these not the worst, it engrosses, together with object-lessons, singing, and drill, practically the whole of the afternoon time-table for the younger children. Now, all this has been done not only without loss of efficiency in the ordinary subjects, but with positive gain. Comparing the work done now in such a subject as arithmetic, for example, with the work done in the same subject in the same schools four or five years ago, I have no hesitation in saying that it is greatly more intelligent and more effective. This is also, I believe, Dr. Kerr's opinion, and similar opinions might be gleaned from blue-books wherever there has been opportunity for making the comparison. As a rule, too, it is precisely in those schools where this kind of work has been most developed that the work in ordinary subjects is found to be most efficient. But perhaps the most remarkable thing is that even as regards the bare *amount* of work done there has been no falling-off. I have paid particular attention to this point, because mistresses, in proposing an

alteration in the time-table which would reduce somewhat the amount of time given to ordinary subjects, have expressed a fear that they would not be able to show the same advancement as formerly. I should not have been astonished—nor dissatisfied—had the profession of work at inspection been at that stage less, but, in point of fact, I have remarked no falling-off.

The reason is really obvious. If, as I have said elsewhere, school work gives adequate exercise for the faculties of the pupils, there is an enhanced pleasure in school life, and a resulting energy which carry the children triumphantly through what are possibly less agreeable occupations. Besides, there is something less analogous to the law of "diminishing return" in education. Progress in a given subject beyond a certain point is not commensurate with the amount of time per diem given to it. As much progress may be made in much less time, provided that the children enter upon the lesson with zest, that the freshness of interest be maintained, and that routine methods and vain repetitions be avoided. Children of five to seven years of age cannot really profit by instruction for four hours a day in the three Rs only. Supposing that no other suitable occupations could be provided for them in school, it would be better that they should spend a considerable portion of that time in the play-ground.

In the infant-schools, then, in this district at all events, it is no longer a question of the introduction of manual training, but rather of making provision for its proper regulation and development. As yet we are only at the experimental stage, and it is not desirable that any hard and fast line of procedure should be laid down. Rather, variety of work should be encouraged, together with the most careful observation and scrutiny of the effect of this kind of work in general, and of the relative values of the various exercises in particular. Theoretical considerations, such as I have stated, seem to me to be of sufficient weight to justify our making trial of manual training as a part of school work, and, so far, the results in infant-schools have been very favourable. But the final decision as to the value of this kind of work must be given at the bar of experience, and there is need, meanwhile, for close, careful, and impartial observation. Indeed, I cannot but think that all departments of school work would greatly benefit if this spirit of inquiry as to the effects of different subjects and methods of instruction were fostered, and routine methods, with all due caution, varied by methods which may be as yet tentative and experimental. I am bound to say that the very visible progress made in recent years in the infant-schools, much greater relatively than in the juvenile schools, may be largely traced to reflection on their work on the part of the mistresses, and to the scope which the freer conditions of the infant-school give to the spirit of inquiry and experiment thereby evoked. It may be laid down, however, as regards manual work in infant-schools, that the teacher should have a clear understanding of what the object of this kind of work is; that she should somehow or other acquire the necessary skill which some of the more advanced exercises demand; and that in any one school there should be a definite organization of the work such as would prevent the repetition of the same exercise in successive years, or the placing of a more difficult exercise before a simpler one.

II. In the juvenile school the introduction of manual training, though not so general as in the infant-schools, has made considerable progress. In about half of the Edinburgh (board) schools it is to be found in some form or other throughout the junior standards (I., II., and III.), and in seven of these schools the boys of the highest standards receive instruction in woodwork. From the favourable opinions expressed by the headmasters in their reports to the Board (see report of school-work committee), a further rapid extension may be expected. I quote such expressions of opinion as the following: "The improvement effected in Standard II. since kindergarten exercises were introduced has encouraged us to continue them in more advanced forms in Standard III." "The experience of the year has all been in favour of the inclusion of science, and hand and eye training in the curriculum of the school." "I am thoroughly convinced of the great educational value of the manual instruction, and the keen interest of the boys in the class is clearly shown by the rare absence of a boy from school on the day set apart for his lesson." "One pleasing feature of the manual-instruction classes is that the boys greatly enjoy their weekly turn in the workshop."

What I have seen of this kind of work, and its effects, in the junior standards is in agreement with the favourable opinion expressed in these reports. The woodwork of the higher standards falls within the sphere of the science and art department, and it is perhaps out of my province to speak of it. But in the reports by that department it has been described as excellent, and in no school have I seen any reason to suppose that the time given to this subject has resulted in loss of efficiency in the other school subjects.

The circumstances of the higher and lower standards are somewhat different, and must to some extent be considered separately.

In the junior standards (I., II., and III.), the case for the introduction of manual training is almost precisely what it is in the infant departments. We have no reason to suppose that child nature undergoes a radical change about the age of eight, and we may fairly expect that a broadening of the curriculum such as would engage all the interests of the children would in these standards also tend to promote rather than to retard advancement in the ordinary subjects. The opportunity for the introduction of manual training into these standards is indeed particularly favourable. Much of the time at present given to teaching the beginnings of class-subjects in I. and II. is wasted, or worse than wasted, inasmuch as it serves only to fritter away the interest of the children in the particular subject. All that the children at this stage do learn, or can profitably learn, of such subjects as grammar, history, and geography would be more efficiently taught in a preliminary course of a week or a fortnight in Standard III. There is no gain, but positive loss, in devoting a certain fixed amount of time per week for a whole year to pointing out nouns in the lesson—or nouns and verbs. Either the children feel and apprehend the function of these classes of words in a much shorter time or they have not yet reached that stage of their intellectual development at which they are capable of understanding it at all. In either case nothing is gained by dint of repetition. So in history a weekly or bi-weekly period is devoted to rehearsing over and over again the facts, or legends, of the life of Wallace, or of the lives of Wallace and Bruce. The

results are that much valuable time is wasted, that, to eke out the programme, details of very doubtful historical or moral value are introduced, and that the children acquire a distaste for the subject. The course is not much improved by the addition of some information about Columba or Black Agnes. I might, were it worth while, justify these criticisms in detail by excerpts from blue-books or from my own experience. The usual treatment of geography at this stage is open to similar criticism.

The truth is that at this stage of the school we have not yet arrived at the point where the separate subjects of oral instruction may be usefully differentiated from each other and separately treated. They might all be replaced by *one single course* of oral instruction, which would be in the main a continuation of the object-lessons of the infant-school, but which might include a certain proportion of lessons on historical or geographical subjects, to be treated after the manner of object-lessons. For these special lessons some natural features of the district, or some scenes of historical interest in the neighbourhood, might be selected as points of departure. A few introductory lessons in grammar might be included, but language-teaching at this stage would probably be better promoted by utilising the object or historical lessons already referred to as material for the practice of oral and occasionally of written composition. The time thus gained, to say nothing of the freedom from distraction, would leave ample room for such amount of manual training as might be found desirable and also for physical drill, and would probably allow of further progress being made in standard work. At present the difference in the requirements in standard subjects in Standards I. and II. scarcely represents a year's work.

In the higher standards the case is not so simple. These standards, especially Standard V., have their own share in the distribution of elementary work over the different standards, and it is on them that the brunt of the real teaching of class-subjects must fall. Not much relief is to be had by attempting to anticipate this part of the work in the lower standards, because so much of what has to be taught makes demand upon the intelligence which cannot reasonably be made at an earlier age. Then, too, in the schools which attempt to do some secondary work some beginning of specific subjects must be made even as early, perhaps, as the Fourth Standard. Clearly the utmost caution must be exercised in introducing an additional subject.

But there are some considerations on the other side. First and most important is the fact, to which I have already alluded, of the rise in age at which Standard V. is being taken. Twelve is rapidly becoming the regular age for presentation in this standard, and there is good reason to believe that in a few years about half the children presented in V. will be over thirteen years of age. If, then, children of twelve and thirteen profess the work in standard subjects which in former years was professed by the majority of children at eleven, there is room not only for greater thoroughness of attainment, but also for a wider range of work in the school curriculum. Then, again, the addition of some form of manual training to the school curriculum may be regarded rather as a relief from than as an addition to the mental work caused by other school studies. On the measure of success which has attended the introduction of manual training so far I cannot in the meantime lay stress, because possibly the experiment has not been sufficiently general or long continued. But it is a fact that in many schools, under present conditions, the girls take all the work that the boys take, and give besides a considerable amount of time to sewing and to cookery. The addition of manual work for the boys would in these cases only counterbalance the extra work of the girls. The only question is whether equality should not rather be brought about by reducing the amount of work for the girls. It is much to be wished that this question of the amount and proper distribution of class-subject instruction were more generally looked at from some other point of view than that of ascertaining the best paying combination. Certainly three class-subjects, besides extras, are often run abreast for the sake of extra grants, when every consideration of educational policy would have suggested that two only should be taken.

The amount of class-subject instruction in the higher standards, and the particular subjects taken up, must in any case depend to some extent on the circumstances of the school and the tastes of the teacher, but I may perhaps venture to suggest the following arrangement as a desirable one in ordinary circumstances:—

That two class-subjects only—viz., English and geography—should be formally professed, and of these two English should receive even a greater proportion of time than at present. That one of the reading-books in use in the class should be a thoroughly readable history *not* arranged with a view to preparing for examinations. The first requisite is that it should engage the interest of the children. To systematize and confirm their knowledge of the facts the children should be asked from time to time to make *for themselves* a summary or digest of certain portions of the book, to be corrected or improved by the help of the teacher. In no case should they be provided with a ready-made analysis to be committed to memory. That manual work—cardboard or woodwork—should be taught to the boys in connection with drawing largely in the time that the girls give to needle-work. This combined subject might be made the means incidentally of some elementary instruction in geometry, and in the application of the pupils' knowledge of arithmetic to simple problems of mensuration. If drawing is taught to girls it should be partly in the time at present given to needlework. That as a subsidiary subject, to be taken up more or less fully according to the time available, a series of lessons should be given on facts of observation and experiment. These lessons should not be directed, purposely at all events, towards increasing the pupils' store of examinable knowledge, but should be in the very strictest sense a training in accurate observation, accurate expression, and correct reasoning.

Under this scheme history would require little extra time beyond that allotted to the reading-lesson, and history- and object-lessons together would probably not require nearly the whole of the time at present given to a third-class subject. The educational result would, I think, be at least as satisfactory, and there would be time for any reasonable development of manual training.

The difficulty in the way of manual training on the score of expense of equipment I need hardly discuss. The expense, except in the case of woodwork, is trifling; and even in the case of

woodwork it is not likely to prove a serious difficulty if once the desirableness of the instruction is recognised.

But I come now to a difficulty of the gravest and most real character—viz., the question of staff. The very general introduction of manual training into the schools of the district is, as I have remarked elsewhere, the outcome of a spontaneous movement on the part of the teachers, especially in the infant departments, and is in no way due to pressure on the part of the inspecting staff, whose attitude has been mainly one of observation. But however disposed we might be to urge the claims of the subject on their attention, we are of necessity dumb when we find teachers—women—in charge of classes of over eighty children, without any help, or in charge of a hundred to a hundred and thirty with the aid of a pupil-teacher. However we may think that in the long run it may help to relieve and brighten their labours, we cannot possibly ask them to undertake any additional work. It is greatly to their credit that work of this kind should have been so generally attempted and so well done, and the ingenuities of organization elaborated for the purpose are worthy of all praise. These large classes occur even under the Edinburgh Board, which has long and deservedly had the reputation of being most liberal in staffing its schools. I am glad to say, however, that the Board has presently under consideration a scheme by which the staff of each school will be still further strengthened. I shall regard it as not the least of the merits of manual instruction if its necessities shall lead to the formation of more correct ideas as to the number of children who can in ordinary circumstances be effectively taught at one time by one teacher. It is of the essence of manual training to be individual. It is in this respect the very antipodes of class-teaching, and consequently the number whom a teacher can effectively supervise is strictly limited. In the case of any of the more advanced forms of manual work that is now an accepted principle, and twenty to twenty-five at most are taken at a time. Even this number is considered by some excessive. It does not follow, of course, that there must be a teacher for every twenty-five children, but that for this subject the children must be taken in sections not exceeding that number. But this arrangement is barely possible with the present average staff of a school, and if manual training is to be effectively carried out that staff must be proportionately strengthened.

But probably some increase of staff is equally to be demanded in the interests of effective instruction in other class-subjects as well. The need for individual instruction is generally regarded as a peculiarity—the merit or demerit—of manual training, but it may be questioned whether it is not a characteristic of all really effective teaching in any subject whatever. The one subject which can be taught by the class method pure and simple is drill. It is useful also in an object- or demonstration-lesson, where some simple and easily-understood fact can be shown to a large number at once. Even here a very little experience will convince the amateur in school methods that the possibilities of misconception among children are endless. But when we come to such a subject as grammar, for instance, the attempt to carry on the work simply by means of class-teaching breaks down hopelessly. Even the most lively and skilful presentation of the subject in the class-lesson will fail of its effect unless it is followed up by patient individual dealing. For one collective lesson, if the subject is to be effectively taught, there must be half a dozen where the pupils are taken sectionally for individual teaching. Scattering questions promiscuously over a class of eighty or a hundred children is not enough. With the average teacher in ordinary circumstances there is no certainty that all the children, or even a large proportion of them, are making any active intellectual effort. They are either inert, trusting to escape the question, or, if forced to respond, content themselves with some stereotyped answer of which they have learned the trick. The individual teaching which is a necessity of manual training is only in a small degree, if at all, less necessary in such a subject as grammar, and in the ordinary school additional staff is greatly needed in the interests of the one as well as of the other.

It goes without saying that, if manual instruction is to be successfully given, the teachers of the subject must possess the requisite technical skill. Ideally, of course, that skill would be most appropriately acquired in the training colleges. But no one who has regard to the amount and the distracting variety of work at present undertaken in these institutions could venture to propose any addition to the curriculum. Whether some reform of that curriculum is on other grounds desirable I cannot here discuss. But I believe that a very adequate preparation for this kind of work might be secured in the case of the majority of future teachers if provision were made in the schools of the large towns where manual training has been to some extent developed for some systematic instruction of the pupil-teachers both in the theory and practice of the subject.

Other teachers who wish to introduce the subject must, I fear, make some sacrifice of their leisure time, as many have already ungrudgingly done, and qualify themselves as best they may by attendance at special classes. The amount of technical skill needed varies greatly with the different exercises. The Sloyd Association of Scotland aims at providing courses under competent teachers in such subjects as clay-modelling, cardboard-work, and woodwork wherever there is a demand for them. Similar courses have been held in connection with the Aberdeen branch of the Educational Institute. A sloyd class is held in the holiday season in connection with the Edinburgh summer gathering. Classes for the instruction of teachers in woodwork have been conducted under the auspices of the Edinburgh Board by the chief woodwork instructor, and doubtless many of the evening classes held in technical and science colleges will afford opportunity for acquiring the necessary skill.

A considerable number of teachers from Scotland have attended holiday courses at the great training-schools of Nääs and Leipzig, and the value of the wider experience of matters educational to be gained at these institutions can hardly be exaggerated. At Nääs, through the generosity of the founder of the institution, Herr Abrahamson, no payment of any kind is required for instruction or use of tools and materials, and in the summer and autumn courses the lectures and instruction are given in English. Last year the committee on technical education of the Dumfriesshire County Council—as many County Councils in England have also done—undertook to pay the expenses of some public-school teachers from the county at Nääs or Leipzig, in order to qualify them for

giving similar instruction at home. They now propose to employ one of these gentlemen, who had a distinguished record at Nääs, to give instruction to other teachers from selected schools in the county. Possibly other County Councils in Scotland may be disposed to follow this example.

But however the necessary skill may be acquired, it is of the last importance that teachers who undertake work of this kind should have a clear and abiding idea of what the object of it is. Hence it is desirable that some theoretical instruction—and discussion—should accompany the practical course. In the case of those who are teachers by profession there should be no great necessity for insisting on the educational aspect of the work. It is the requisite technical skill in which they are more likely to be lacking. Especially is this the case with woodwork (or ironwork), where the acquirement of the necessary skill in one previously destitute of it is a matter of months rather than of days or weeks. Yet it is simply indispensable that a teacher should himself be able to do reasonably well what he attempts to teach others. At first sight, the obvious thing to do would seem to be to employ a skilled artisan. But this in ordinary circumstances is an expedient of at least doubtful policy. Certainly there are artisans who are by nature teachers, or who quickly apprehend and adapt themselves to the educational aims of woodwork instruction in schools. To take a parallel case, I know of teachers of cookery, not trained teachers, whose grasp of educational objects and methods is as firm as that of those who are teachers by training and profession. But to employ any one to conduct a course of manual training simply on the ground of his skill as an artisan is a most hazardous proceeding. Such an one from his whole bent and training is apt to lose sight of the educational end, and to aim at one thing only—viz., the making of the boys, so far as opportunity allows, as expert workmen as himself, and that by the shortest, readiest, and most mechanical methods. Now, it is no part of the business of the elementary school to turn out expert workmen. That aim may be allowable—I do not affirm that it is—in teaching lads in evening continuation schools or in technical schools, but it is out of place in the elementary school. The function of the elementary school, if it goes beyond its primary business of giving effective instruction in the three Rs—and even in these—is to develop intelligence and build up character, and there is no place in its curriculum for manual work of any kind, except in so far as it can be made to conduce to these two great ends. In the elementary school the manual training given, of whatever kind, must be sloyd, using the word not as denoting any particular system, but in the wider sense I have endeavoured to give it, and sloyd in the service of the school; and the person who teaches it, whether he has all the skill of an artisan or not, must, at all events, have the instinct and aims, if not the training, of a teacher.

I have, &c.,

The Secretary, Scotch Education Department. J. Struthers.

B.—CIRCULARS ISSUED BY THE EDUCATION DEPARTMENT, AT WHITEHALL.

1.—INSTRUCTION OF INFANTS.

(Circular 322.)

Sir,— 6th February, 1893.

You will have observed that in the Education Code of 1892 teachers holding either the elementary or advanced certificate of the National Froebel Union are allowed to rank as assistant teachers in infant-schools under inspection. And you will doubtless have rightly inferred from this concession that the department are desirous of giving further encouragement to the employment of kindergarten methods.

The circumstances of infant-schools have altered considerably in the last few years; the numbers in the lower classes having increased (especially in schools which have accepted the fee-grant, and have consequently either abolished or largely reduced their school fees), a full four years' attendance at the infant-school will be the rule and not the exception. The improvement also shown in passing the standards at an earlier age than formerly gives to infant-schools greater liberty and leisure in developing natural methods of education.

As regards the elementary subjects, the conditions of the Code are fully satisfied if the scholars over seven can pass, as a rule, in the First Standard; nothing more should be attempted in these subjects in the infant-schools, except in the few cases in which scholars are allowed to be retained for the work of the Second Standard. The scholars in the lower classes of infant-schools may therefore be relieved from any premature preparation for those subjects on methods ill-suited to their tender age.

Two leading principles should be regarded as a sound basis for the education of early childhood:—

(1.) The recognition of the child's spontaneous activity, and the stimulation of this activity in certain well-defined directions by the teachers.

(2.) The harmonious and complete development of the whole of a child's faculties. The teacher should pay especial regard to the love of movement, which can alone secure healthy physical conditions; to the observant use of the organs of sense, especially those of sight and touch; and to that eager desire of questioning which intelligent children exhibit. All these should be encouraged under due limitations, and should be developed simultaneously, so that each stage of development may be complete in itself.

It has been strongly urged that sufficient attention has not been paid in the past to these principles; indeed, it is often found that the kindergarten occupations are treated as mere toys, or amusing pastimes, because they are attractive for children, and the intellectual character of the "Gifts of Froebel" is disregarded, whereas the main object of these lessons is to stimulate intelligent individual effort.

You should direct the attention of teachers to the chief consideration which underlies true methods of infant-teaching—namely, the association of one lesson with another through some one

leading idea or ideas. The reading-lessons, occupations, and object-lessons may all be usefully combined—*e.g.*, if the teacher wishes to impress on her class some knowledge of a domestic animal, she may usefully combine the object-lesson for general study of its structure; the reading-lesson for a knowledge of its habits and character; some occupation, such as pricking the outline, to impress an exact knowledge of its form; a song or simple story bearing on its association with human life; so that familiarity with animals, especially with domestic animals, and a kind treatment of them, may be fostered.

On the other hand you should caution teachers against the mere repetition of the same exercises and lessons; the progressive character of the whole scheme of instruction should be constantly kept in view; and each exercise should lead up to something beyond itself.

Pictures and flowers have been wisely introduced of late in greater abundance into infant-schools, and have added much to their cheerfulness and attractiveness. They should be frequently taken down into the class, and made the subject of conversation. It is not enough that the children should be taught to observe these things and to answer questions upon them. They should be encouraged in every way to give expression in their own words to what they know, what they want to know, and what they think.

It will be found that the elementary subjects when taught on right methods can be treated with greater variety; reading becomes a kindergarten lesson through pictures and word-building; writing becomes a variety of kindergarten drawing; elementary exercises in number are associated with many of the kindergarten occupations.

It is the experience of many good teachers that by the adoption of such methods it is found to be unnecessary before the sixth year is passed to employ books for reading, except occasionally for a change of occupation, or perform any exercise in writing except the elements of letters, or to do any formal arithmetic work on slates.

It may reasonably be hoped that the observance of these suggestions will materially improve the work of the younger children in infant-schools and classes, by relieving the teacher from that useless subdivision in the elementary subjects, which has been hitherto generally employed, and by rendering the instruction less formal, but more varied and attractive.

A list of varied occupations is appended to this circular. I have, &c.,

G. W. KEKEWICH.

The following list of varied occupations may serve as a guide to teachers, especially in infant-schools or classes, which may be divided into sections for those lessons:—

(*a.*) What children between the ages of five and seven can do: Games with music. Games without music (guessing games, &c.; taking messages). Picture-lessons. Object-lessons. Story-lessons—*e.g.*, stories from history; Grimm's Household Tales. Recitations. Paper-folding. Mosaic with coloured paper; use of gum. Drawing; brush-drawing. Plaiting paper. Ruling simple geometrical forms. Measuring length; estimating length. Weighing; estimating weight. Setting a table (carrying a glass of water without spilling it; moving cups without breaking them). Modelling in clay. Basketwork. Cutting out patterns and shapes with scissors. Word-building. Number pictures, with cubes, beads, &c.

(*b.*) What children between three and five years of age can do: Games with music. Games without music (guessing games, &c.). Recitations, nursery rhymes, &c. Picture-lessons (learning to answer in complete sentences as to what they can see in a picture). Paper-folding. Mosaic with coloured tablets. Drawing. Matching colours (picking out the same shades of wool from a heap of remnants). Plaiting paper. Working patterns with needle and worsted. Threading beads in twos, threes, &c. Arranging shells in twos, threes, &c. Arranging "pictures of number" with cubes. Word-building.

2.—INSTRUCTION OF LOWER STANDARDS IN SCHOOLS FOR OLDER SCHOLARS.

(Circular 332.)

SIR,— 6th January, 1894.

A general opinion was expressed by the Chief Inspectors at their last conference that the condition of the lower part of many of the schools for older scholars is at present the weakest point of the instruction in public elementary schools.

In the best infant-schools children are taught by natural methods, and are trained to use their powers of observation and reasoning; in schools for older scholars they are too often taught by arbitrary and conventional methods, and there is little in the general course of instruction to lead them to observe or to reason. Object-lessons are in many cases discontinued, the reading-lessons are encumbered with the teaching of spelling even in the First Standard, and hand and eye occupations are very rarely found. Arithmetic also often becomes a mere abstract or mechanical exercise, and is not made to rest upon simple questions of common life within the knowledge and observation of the scholars, nor is it always sufficiently an exercise in reasoning.

When the general character of the lesson presents so little opportunity for the cultivation of intelligence, it cannot be expected that the habit of a spontaneous desire to question which ought to be fostered in young scholars will arise; and it is to be feared that, when examined, they often reproduce knowledge which has been conveyed by methods which are not truly educational.

It should be borne in mind that object-lessons cannot be dispensed with if habits of observation are to be duly fostered, and they should be treated as a means for mental exercise and not merely as opportunities for imparting miscellaneous information. Objects should always be present, and in sufficient numbers; and the chief aim should be to call into activity observation and the construction of clear mental pictures, so that the intelligence of the pupils may be exercised and developed. Geography, where it is a class-subject, should be treated in a similar way, and should be taught by visible illustrations and by actual modelling in sand and clay, for the production of miniature rivers, mountains, &c. Tales from history also, if graphically told and well illustrated by

striking pictures of sufficient size, will be very helpful in the same direction. Elementary science (the schemes for which as given in Schedule II. of the Code prescribed object-lessons solely for the First and Second Standards) is obviously an excellent class-subject from this point of view.

But, whatever may be the method followed, some system of lessons should be arranged in every school by which an intelligent habit of observation and simple reasoning may be fostered, while it cannot be too clearly pointed out that all the subjects simultaneously dealt with in a curriculum should be kept as closely interconnected and made as mutually helpful as possible, and not be unduly isolated and specialised.

So also as regards hand and eye training, it is much to be regretted that the ingenious and progressive kindergarten exercises for training scholars in deftness of hand and correctness of eye should be almost entirely discontinued after children leave the infant-school; and the more so when it is remembered that the mind itself is most effectively trained by such exercises, whenever they are the expression of the children's own thought.

Drawing with coloured chalks, modelling in clay, embroidery of outlines, formation of geometrical patterns and models, and building with cubes, &c., have been tried with excellent results and at very small cost, as convenient methods of continuing the instruction given in the infant-school.

You will be careful to explain to managers how very interesting, inexpensive, and educational all these methods are.

As regards the elementary subjects, spelling, unless founded upon methodical and well-graduated lessons on classes of words, should be absolutely discouraged in the lower classes; and in arithmetic, no sums should be set either in the First or Second Standard which the scholars themselves cannot either put down when set in a concrete form or translate into concrete qualities when set in abstract numbers.

The use of the reading-book for spelling-lessons should also be discouraged. Otherwise the interest in the subject is lessened, and the time which should be devoted to intelligent conversation between the teacher and the class on the matter of the lesson is curtailed.

In connection with object-lessons or other similar instruction, the practice of answering by complete sentences, which largely prevails in infant-schools, should, whenever possible, take the place of elliptical or simultaneous answering.

Attention might be also usefully drawn to the desirability of employing, in these lower parts of schools for older scholars, women teachers who have had experience in infant-teaching, and especially those who have been trained for kindergarten work.

It should never be forgotten that, unless the lessons themselves are made attractive to these young children by their simplicity of treatment, by the suitability and variety of the illustrations, and by association with their everyday life, the most carefully drawn curriculum, and the most thoughtful arrangement of time-tables will fail to attract the children of those parents who set little value on the education of their children.

Their Lordships believe that there is nothing in the Code, or in the present system of examination, that need in the least degree prevent such simple and natural methods of teaching as have been described, and they would be glad to hear of anything that would remove any impediment, should such appear to exist. They desire also to point out that the general intelligence which these methods of instruction tend to foster is of the highest advantage in improving the teaching of other subjects of instruction which form part of the curriculum. I have, &c.,

G. W. KEKEWICH.

3.—OBJECT-TEACHING.

(Circular 369.)

SIR,— 25th June, 1895.

It has been observed that in schools in which object-teaching has been introduced with most success the teachers have carefully distinguished between two kinds of instruction which in other schools are not seldom confused. These two kinds of instruction are: (1) Observation of the object itself, and (2) giving information about the object. This distinction is of importance, because the scope and method of the lesson differ according to its nature. Object-teaching leads the scholar to acquire knowledge by observation and experiment; and no instruction is properly so called unless an object is presented to the learner, so that the addition to his knowledge may be made through the senses.

Junior teachers have not unfrequently given lessons before Her Majesty's Inspectors which were wrongly described as object-lessons, because in dealing with the topic selected no suitable appeal was made to the eye of the scholar. A lesson, for example, on the elephant to children in village schools, who have no opportunity of visiting either museums or zoological gardens, may convey information and store the memory with interesting facts, but it does not cultivate the habit of obtaining knowledge directly and at first hand, or develop the faculty of observation. However well the lesson may be illustrated by diagrams, pictures, models, or lantern-slides, if the children have no opportunity of handling or watching the actual object which is being dealt with, the teacher will be giving an information-lesson rather than an object-lesson. It should be always remembered that in object-lessons the imparting of information is secondary to the cultivation of the faculty of observation.

Object-teaching should be further distinguished from instruction in natural science. It is elementary science only in so far as it aids the child to observe some of the facts of Nature upon which natural science is founded; but as it deals with such topics without formal arrangement, it differs widely from the systematic study of a particular science. The principles of scientific classification, the continuous study of one group of natural phenomena, the generalisation from facts and the search for natural laws, belong to a later stage of mental discipline, which will be much more effectual if it is being based upon the preliminary training of the senses through sound

object-teaching. It is most important, therefore, that if, for example, object-lessons are given on plant life, no attempt should be made to treat them as a continuous introduction to the study of botany, or, if the lessons relate to animal life, to the study of zoology. In object-teaching the chief interest in the lesson should centre in the object itself.

The following suggestions, which have been made by practical teachers, will be found useful:—

(1.) The teacher should select only so many of the objects set forth in the appended or other similar lists as can be dealt with in the year without overburdening the scholars. Habits of observation are better cultivated by the thorough examination of a few objects than by the superficial treatment of many.

(2.) No object should be chosen which the teacher cannot thoroughly illustrate either by the object itself or by some adequate representation of the object, or by both. All that is purely technical, whether in the mode of study or the language and terminology, should be carefully avoided.

(3.) The children should be encouraged to bring with them to the lesson illustrative specimens which they have collected or borrowed from friends.

(4.) The children should be encouraged to make simple drawings, illustrative of their observations, wherever possible, and in certain cases to make simple records on square ruled paper. Clay-modelling and other manual occupations may be employed to test the accuracy of the impressions which the children form, and to fix them in their minds. Teachers also should frequently illustrate details of the lesson by black-board drawings. Children who are jaded in five minutes by a lecture will be open-eyed and receptive for half an hour while the teacher draws as well as talks.

(5.) Visits to museums and other institutions of educational value are now recognised by the Code, and may advantageously be undertaken where possible in connection with the object-teaching. Occasional class excursions out of school-hours (or, if the instruction be in accordance with Art. 12 (*f.*) of the Code, in school-hours), under proper guidance, will enable teachers both to provide suitable objects and to confirm previous impressions. It should be borne in mind that objects, when they are brought into the class-room, cannot be there studied under their ordinary conditions; and therefore it is important by a proper use of such expeditions to let the children see what part the object plays in its usual surroundings.

(6.) If the scholars are to learn intelligently from their object-lessons, the first requisite is trained attention. The right method of securing this is to direct, in a conversational way, the attention of the children to the different parts of the object in an orderly manner, and explain the relation of each part of the whole. After the analysis or study of separate detail, the object should be again treated as a whole. It should not be left in fragments, but the division into parts should be followed when possible by the reconstruction of them into their original unity. Through such teaching the vague and indefinite impressions which children receive from objects when they are first presented to them are gradually converted into clear mental pictures.

(7.) The attempt to teach children to be accurate in observation cannot be separated from the need of making them accurate in description. After the children have been trained to observe a fact, they should be practised in making a correct statement of it in a sentence of their own. This oral answering in complete sentences will lead to correct use of the English language, both in talking and writing, and will store the mind with a useful vocabulary. In the higher standards the children will be able to write brief weekly compositions, in which they may express in a written form the ideas which they have acquired through oral instruction.

To sum up the main value of object-teaching, there are three principal uses. The first and most important is to teach the children to observe, compare, and contrast; the second is to impart information; and the third is to reinforce the other two by making the results of them the basis for instruction in language, drawing, number, modelling, and other handwork.

There are, however, other important uses of good object-teaching. It makes the lives of the children more happy and interesting by opening up an easily accessible and attractive field for the exercise of brain, hand, and eye. It gives the children an opportunity of learning the simplest natural facts, and directs their attention to external objects, making their education less bookish. It further develops a love of nature and an interest in living things, and corrects the tendency which exists in many children to destructiveness and thoughtless unkindness to animals, and shows the ignorance and cruelty of such conduct. The value of the services which many animals render to man should be dwelt upon, and the importance of kindly treating them and preserving them should be pointed out. By these means, and in other ways, good object-teaching may lay the foundation for the right direction of the activity and intelligence of the children throughout the whole school.

I have, &c.,

G. W. Kekewich.

4.—OBJECT-LESSONS.

The following lessons deal with the ordinary phenomena of common life and with objects familiar to the children. The teacher's choice is not confined to these lists; other objects will be accepted subject to the approval of the Inspector. Any of the objects may be dealt with at the discretion of the teacher in more than one lesson, and although they have been grouped for convenience of reference, it is not intended to prescribe any specified number of them for a yearly course. With different treatment the same object may be adapted to more than one standard. Some teachers may prefer to deal with the same object in successive years, or to recur to it after a year's interval, expanding the study to suit the growing powers of the scholars. To meet the varying requirements of teachers, it will be noticed that in some cases the names of the objects have been merely enumerated, while in other cases a few suggestions have been added as to the mode of treatment.

(1.) Plant Life.

(a.) *The Study of Plants as Growing Things.*

Grow an onion in a bottle of water, and note appearance of root and stem. Make a model in clay of the various stages of growth at short intervals.

Grow mustard-seed on damp flannel, and note stages of growth.

Notice a few curious roots.

The carrot: Cut off the top of one and grow it in a saucer of water. Contrast the root of a daisy (fibrous).

Roots which walk: Strawberry or strayberry. Violet-root.

Contrast root of Iris and Solomon's Seal in their modes of extension.

Stem: Count the rings in a trunk that has been felled; rings, how produced; estimate age of tree; the record of wet or dry seasons.

Climbing stems: Ivy.

Train bindweed up a stick and note that it turns to the right. If you unwind it and force it the other way (to the left), note how it resumes its old direction again, holding the stick with one of its leaf-stalks to get a purchase for the change.

Simple experiments to show effect of light on (1) leaves and (2) roots. Celery: Blanching.

Leaves of deciduous trees contrasted with leaves of evergreens. Contrast leaves of holly, ivy, and box with leaves of oak, elm, and beech.

Note autumn tints. Collect and press leaves of various colours in autumn.

Buds: Leaf-buds and flower-buds.

Parts of a flower.

Fruits: Different kinds.

(b.) *Blossoms, Fruits, Seeds, and Leaves.*

Parts of a flower.

Flowers of curious shape.

Pea-blossom.

Insects and flowers.

Colours of flowers and insects.

Fruits. How seeds are scattered.

Shooting seeds.

Flying seeds.

Curious flowers, *e.g.*, primrose, compound flower (daisy), water lily.

Leaves: Shape, veining, arrangement.

Flowers as supplying (1) weather-glass, (2) clock, (3) calendar.

Examine celery plant. Cut leaf stalks into thin sections to see how a plant is built up.

(c.) *How Plants are adapted to their Surroundings.*

A bunch of spring flowers (according to time of year).

A bunch of summer flowers (according to time of year).

A bunch of autumn flowers (according to time of year).

Flowers and the soil. Bog plants.

Riverside plants.

Plants that grow in running water.

Plants that grow in still water.

Meadow plants.

Plants of the heath and moor.

Plants of the hills. Plants of the wood. Plants of the sea-coast and salt-marshes.

Sundew and flesh-eating plants.

Ferns.

The spores of ferns.

Grow some spores in a pan under glass and watch growth and development of a fern. Contrast with growth of mustard from seed.

Mosses.

Lichens.

Funguses.

Simple experiments in manuring plants.

How plants help to hinder each other's growth.

Parasites: Mistletoe.

Plants which help or injure man.

(2.) Animal Life.

(*a.*)

The Cat (compare with Dog).—Eyes; rough, dry tongue; soft pads and sharp claws, teeth, method of holding prey, drinking, covering of fur, whiskers, tail.

The Cow (compare with Sheep and Goat).—How she takes her food, teeth, chewing, milk (cheese and butter), tail, hoofs, covering, ears, horns, nose.

The Horse (compare with Donkey).—Covering, teeth, hoofs, tail, mane.

The Rabbit (compare with Hare).—Teeth, legs, feet, claws, covering, tail, whiskers, ears, eyes.

The Mouse (compare with Rat and Water-rat).—Teeth, paws, tail, whiskers, eyes, ears.

A Fish.—How fitted to live in water, weight, shape, covering, temperature, movements.

A Plaice (compare with Herring).—Flat, eyes on one side of head, gills, movements.

Animals which sleep in winter.—Examples: Squirrel, dormouse, common snake, frog, toad, snail, slug. Preparation made for sleep.

(*b.*)

Mole.—Shape, snout, teeth, paws, claws, eyes, ears, fur, food.

Hedgehog.—Covering of spines, how it rolls itself into a ball and why, head, teeth, food.

Common Snake (compare with Viper).—Shape, covering, teeth, how it moves, how it swallows its prey.

Frog (compare with Toad and Newt).—Movement, capture of prey, breathing, winter-quarters.

Garden-snail (compare with Slug).—Shell, mantle, head, horns, eyes, food, preparation for winter-sleep.

Earth-worm.—Shape, rings, locomotion, food, usefulness.

Spider (contrast with Bee).—Shape, segments, legs, eyes, jaws, spinnerets, web, breathing organs.

(c.)

Paws and Claws and their uses.—Cat, dog, rabbit, mouse, mole, frog.

Tails and their uses.—Horse, cow, donkey, dog, cat, monkeys, harvest-mouse.

Tongues and their uses.—Cat, dog, cow, woodpecker, frog.

Teeth and their uses.—Man, cat, cow, horse, rabbit, snake, fangs of poisonous snakes.

Hair, Fur, Wool, and their uses.—Cat, mole, dog, sheep, fox.

Beaks of Birds and their uses.—Duck, fowl, parrot, sparrow, goatsucker, heron.

Feet of Birds and their uses.—Duck, fowl, swift, owl, &c.

Insects.—Examples: Bee, beetle, butterfly, cockroach, silkworm. Insect development—legs, wings, segments, mouth, breathing apparatus, ovipositors.

3. The Sky, the Air, the Surface of the Land, and Water.

(a.) *The Sky.*

Sunrise, noon, and sunset. (Note the object over which the sun is seen to rise from month to month. Note sun's position at noon, and its varying height above horizon.)

Shadow. (Note by aid of a spike erect on a flat disc the varying length of the shadow at noon. Study the shadows of objects. Variation in sharpness and depth.)

Moon. (Note the changes. Draw the shape from week to week.)

A few of the brightest constellations. (Make diagrams on square ruled paper from a study of the sky itself. Great Bear and Pole Star; Lyre and Vega; Cassiopeia.)

Planets. (Note any planet visible when the lesson is given. Mark its position on square ruled paper for a few weeks.)

Varying length of day and night.

(b.) *The Air.*

Wind. Varying direction. (Note and keep record of the direction of the wind from day to day.)

Warmer and colder winds; rainy and dry winds.

Moisture in the air shown by seaweed; string (changing tension).

Wet cloth dries in the wind (water turns to vapour).

Vapour turns to water. (Breathing on slate. Clouds on hills. Evening mists.)

Clouds in the sky. Three chief kinds: "Heaps," "beds," "feathers."

Rain. (Note size of drops. Raindrops on dust form little balls. Note effect of heavy rain in tearing up roads. Note the channels so made, and the arrangement of the sand and pebbles washed to a distance.)

Rainbow. (Note the succession of colours. Note position of sun behind observer and of the bow where the shower of rain is falling. Note that height of arch changes. When is it higher and when lower?)

Rainbow colours on shells, film of tar, &c. Feathers of birds.

Dew. (Note when formed. Cloudless weather. On what does it lie thickest?)

Hoar frost.

Snow. (Note the size of flakes. Movement of flakes in the air as they fall. Snowdrift. Snow squeezed into ice.)

Hail. (Note when it falls. Examine hailstones. Is the hail accompanied by thunder?)

Thunder and lightning.

(c.) *The Surface of the Land.*

Level or sloping. Simple way of measuring slope. Height of school and neighbouring hill-tops above sea-level.

Flow of water over the land. Neighbouring stream or streams. Water-partings.

The river basin in which the school is situated.

Construct a model fountain and make simple observations on the pressure of water. Mill-dam. A "head" of water. Notion of falling water as a motor.

Soils. Clay, sand, slate, granite, chalk, quarries near school, gravel-pits, clay-pits, brick-works. (Note how the rocks lie, in layers or in masses without structure.)

Stones in the brook, water-worn; pebbles on beach, rounded; pebbles in gravel-pit often with sharp edges, perhaps ice-borne.

Difference between sand and mud. Crumbling rocks. Effect of frost on damp rocks.

Caves by the sea formed by the waves; caves inland formed by rain dissolving limestone; stalactites. (A lesson for schools in limestone regions or near rocky coasts.)

Building stone, marble, slate, Bath stone, sandstone, &c.

In marble, note shells, &c. Note plants in coal.

Volcanic rocks. Lava, brimstone, pumice-stone, basalt or whinstone (according to the nature of the district).

Rock salt; crystals of salt. Salt in sea water. Mineral in solution.

Hard and soft water. Rain water compared with streams from chalk or limestone; leavings after evaporation. Fur in kettles. Softening hard water.

(In certain districts) other minerals in solution, sulphur wells, iron springs, medicinal waters.

Mortar and cement. (Slake lime and make mortar; note the heat, &c.)

Surface soils. Crumbled rocks. Water-borne sand and mud. Vegetable mould and earth-worms.

Vegetation and cultivation. Forest, moor, and heath. Heathers.

Hedgerow trees, elms, ashes.

Trees of the forest, oak, beech, birch.

Evergreen trees, pines and firs.

Evergreen plants and shrubs, holly, ivy, box.

Contrast evergreen and deciduous leaves. (Note change at fall of leaf. Autumn tints. Press specimens.)

Riverside trees, willows, poplars, aspens.

Hill pastures and meadows. Turf on the downs and hay in the valleys.

Gardens and their contents. Garden fruits and wild fruits. Garden flowers and wild flowers.

(d.) *Water.*

Standing water; ponds; pond life.

Springs and running water. Clear water looks shallower than it is. Simple experiments in illustration.

Study of flow of a stream. Where the flow is quicker (*a*) in the middle; (*b*) on one side, outer and inner bend. Where the bank is eaten away, and where sand is spread out. Varying bottom; deep pools, shallows, sand banks. Confluence of tributary. Delta. Measure the speed at which the water flows.

Study of sea-shore. Rocky and sandy coasts. Soundings. The rise and fall of the tide. Currents. Drifting sand. Effect of frost on cliffs. Breakwaters. Layers of soil and rock exposed down the side of a cliff.

Measure with thermometer the temperature of (*a*) a spring; (*b*) a stream; (*c*) a pond; (*d*) the sea.

Ice: Study hardness, mode of fracture; splitting blocks with a needle. Does it sink or swim in water? Easy to make two surfaces of ice freeze together. Simple experiments with ice.

Watch and record behaviour of thermometer plunged in melting ice.

Melt some ice carefully to find out whether it takes up more or less room than the water into which it changes. (Force a mass of ice into a lump of clay and let it melt there.)

Freeze some water in a bottle, and note bursting of bottle. Bursting of pipes.

Notes on expansion and contraction of substances illustrated by behaviour of water at different temperatures. Preliminary notion of thermometer.

Watch cold spring-water being heated to boiling-point in transparent glass vessel. Note bubbles of air given off, and as the water is heated bubbles of steam rising from below. Observe force of compressed steam. Preliminary notion of steam-engine.

Dribble powdered alum into clear water. Hang thread in the solution and note the formation of crystal. Alum and other crystals.

Expose to the air crystals of (1) salt, (2) soda. Note change. What difference. What difference according to weather. Expose to the air crystals of saltpetre, and note result.

Dribble salt into clear water, and note that it dissolves, quicker at first, then slower, at last no more is dissolved. Place a fresh egg in saturated solution, and afterwards transfer it to clear water.

One liquid is denser than other. Compare water and mercury. Things which float in mercury and sink in water.

Upward pressure of water on bodies dropped into it. Why bodies sink or float. Why steel ships float. Why cork floats.

Simple experiments in displacement of water.

Simple experiments in pressure of water and pressure of air. Siphon. Squirt. Pump. Diving-bell.

Distillation of water. Filtration.

Water—a combination of two gases, oxygen and hydrogen. Simple experiments.

4. Object-lessons for Town Schools.

(*a.*)

The water we drink—how obtained

Some of the simpler properties of water.

River (or canal)—according to circumstances.

Boats, barges, or ships, with which children are familiar—according to circumstances.

Other ships, *e.g.*, Atlantic liners.

Bricks—their size, shape, and manufacture; their size, &c., to be ascertained by children's measurements.

Bricklayer's work—arrangement of bricks in 14in. wall and in 9in. wall, shown with real bricks, or with small wooden ones; mortar, &c.

Coal—its simpler properties.

Coal—how obtained.

Coal—how transported and how used.

Coal-gas; it may be made in presence of the children.

Gas-works and gas-pipes.

Petroleum—how obtained; its simpler properties and uses.

Lamps and their dangers.

Common stones used in building and road-making.

Road-making and paving.

Quarries and quarrymen.

Railways—general sketch.

Engines and carriages.

The work of railway men.

The park or public garden—general sketch.

The park or public garden—one or two of its more conspicuous trees.

The park or public garden—one or two of its more conspicuous plants.

Comparison between calico and flannel.

Cotton and its manufacture.

Lancashire and the cotton district; mills.

Sheep-clipping and rearing.

The West Riding of Yorkshire; factories, &c.

(*b.*)

Cart-horse. Donkey. Sparrow. Rat or mouse. Cat.

Plants grown in schoolroom (acorn in glass of water).

Plants grown in schoolroom (mustard and cress).

Plants grown in schoolroom (hyacinth in water or pot).

Plants grown in schoolroom (a fern).

Costermonger and what he sells.

Some common fruits sold in streets or shops, *e.g.*, pears and apples.

Some common fruits sold in streets or shops, *e.g.*, strawberries.

Some common fruits sold in streets or shops, *e.g.*, oranges.

Some common fruits sold in streets or shops, *e.g.*, cocoanuts.

Things seen in grocer's window, *e.g.*, tea.

Things seen in grocer's window, *e.g.*, sugar.

Things seen in grocer's window, *e.g.*, coffee.

Things seen in grocer's window, *e.g.*, currants and raisins.

The baker and his work.

The milkman.

The addressing and posting of a letter.

The postman and post-office.

The sweep and his work.

Dangers from fire and how they may be avoided.

The fireman and fire-engines.

'Bus- or tram-drives.

The policeman.

5. Object-lessons for Country Schools.

(*a*.)

The farmyard. Its buildings and their contents. Animals kept on a farm and their uses. Necessity of cleanliness, kindness, and suitable food.

The dairy and its contents. Butter- and cheese-making.

Bees. Bee-keeping.

Spring. Spring flowers. Work in the fields in spring. The cuckoo and swallow. Record date of arrival.

Summer. Different kinds of leaves and fruit. Work in the fields in summer.

Autumn. Work in the fields.

A mill and the work of a miller.

Winter. Frost. Ice. Snow.

Birds. Singing-birds, as the thrush and nightingale. Birds of prey, as the hawk. Swimming- and wading-birds, as the duck and heron.

Wild animals. The fox, hare, and rabbit.

Minerals. A mine. Three useful minerals.

The lessons on the seasons should correspond with the actual seasons of the year, and the different operations explained should be taken while each is in progress.

Leaves of trees may be dried by simply placing them between sheets of paper and pressing them. Their shapes may be used for the children to draw round on paper, which can afterwards be pricked and then sewn round.

(*b*.)

Spring-time:
- The waking of Nature.
- The lengthening daylight in the morning and evening, the coming warm weather; birds singing, building their nests, laying their eggs; the trees and hedges changing, buds and leaves, the bloom on fruit-trees.

The local wild flowers of spring. The daisy, primrose, bluebell.

Summer-time.

The local wild flowers of summer.

Autumn.

The local wild flowers of autumn.

Winter. The repose of Nature.

The land. Woodland, meadowland, ploughland, moorland.

The sky.

A bird—covering, wings, beak, feet; motion; nest, eggs, food.

Local birds:
- Thrush or blackbird.
- Lark.
- Robin.
- Rooks.

Birds which come for the summer.

Birds which come for the winter.

Local wild animals:
- Rabbit.
- Hare.
- Fox.
- Hedgehog.

Animals on a farm.

Our village.

The carrier's cart.

The cottage garden.

The stream or river, its banks, the birds and animals that live near it.

A fish. A plant.

(*c*.)

The garden in spring.
The farm in spring.
The garden in summer.
The farm in summer.
The garden in autumn.
The farm in autumn.
The garden in winter.
The farm in winter.
The weather and wind.
The soil—sunshine, air, rain, frost, manure.
The farmer's tools—the plough, drill, reaping-machine.
The crops—grass, corn, root-crops.
Wheat.
The potato.
The oak-tree.
The elm-tree.
The apple-tree.
Evergreen trees.
An insect.
The spider and his web.
The butterfly—colours, beauty, history.
Bees.
The farmer's pests.
The farmer's friends.
A pond.
A frog.
A ramble in a wood, and what may be seen there.
The railway.
Market-day in the neighbouring town.
A newspaper.

6. Object-lessons in the Science of Common Things.

(*a*.)

Water.—How carried; jugs, bottles, barrels, spouts, funnels. Wells. Things that float; things that sink.

Solids.—Hard and soft, in the room and in clothing. Files. Hammer and nails. Buttons.

Powders.—Flour.

Pastes.—Paste, clay, putty.

Things porous.—Bread, sponge.

Things that melt.—Butter, tallow, sealing-wax; ice, snow.

Water.—Drying clothes, breathing on slates, frost on the pane. The boiling of the kettle. The pot boiling over.

Things that dissolve.—Sugar, salt.

Air.—Bubbles, pouring water through funnel into empty bottle. A burning candle. Fans blowing feathers. Paper windmills.

Forms of Strength.—The floor, joists, and boards. Wooden bridges. Steps and stairs.

Things that stretch.—Elastic bands.

Things that bend.—Bows and arrows. Cord, ropes.

Machines. — Tops. Roller for pastry, for garden. Perambulator.

Movements. — Walking, running, leaping, creeping, crawling.

Musical Toys.—Harmonicon. Bell.

(b.)

Water.—Pipes, taps, the fountain. Canals. Rafts, boats, anchors.

Solids.—Teeth, nails and claws. Sand-paper. Pins, needles, awl, gimlet. Hook and eye.

Powders.—Chalk, pencil.

Pastes.—Mud in streets, brick-making.

Things porous.—Brick, chalk, springs of water.

Things that melt.—Candle-making. Icicles.

Water.—Manufacture of salt from brine. Rain-drops, hail, spray, water-dust, the cloud.

Things that dissolve.—The manufacture of sugar.

Air.—The chimney, draughts. Waves and breakers. Winged seeds. Shuttlecock, arrow and kite.

Forms of Strength.—The ceiling. The arch. Ladders.

Things that stretch.—A football.

Things that bend.—Cart-springs. Paper-clips. Spider's web.

Machines.—Hoop, fly-wheel of sewing-machine. Mangle. Wagon. Bicycle.

Movements.—Swimming.

Musical Toys.—Musical-box. Drum.

(c.)

Water.—Siphon, pump. Oil, cream.

Solids.—Hinges, tires and axles. The grind-stone. Screws and screw-drivers.

Powders.—Black-lead.

Pastes.—Pottery.

Things porous.—Blotting-paper, towels, wicks, earth.

Things that melt.—Lead, iron.

Water.—Salt lakes. Distillation of water. Clouds and rain.

Things that dissolve.—Crystals, hard water, varnishes.

Air.—The popgun, the fire-engine. Winds. A sailing-ship.

Forms of Strength.—The roof. Railway bridges. Cranes.

Things that bend.—Clock-spring. Chains.

Machines.—The loom. Threshing-machine. Rolling iron rails. Coining.

Movements.—Flying.

Musical Toys.—Tin whistle. Sounds from stretched cord.

7. Measuring, Weighing, and Testing.

A two-foot rule.

Measurements of length—first by eye, then with rule. } Measurements in inches only.

Easy measurements of a square—first by eye, then with rule. } Measurements in inches only.

Easy measurements of rectangles.

The wire-gauge.

Callipers.

Scales and weights.

Weighing of common objects—first by hand, then with scales. Weight in ounces only.

Weighing letters.

Plumb-line.

Spirit-level.

Steam—observations on boiling water; condensation of steam, &c.

Mercury—weight of; *cf.* drop of mercury and drop of water; effect of heat on mercury.

Alcohol—effect of heat on it; its evaporation.

Thermometer, its manufacture.

Thermometer—uses; readings in ice, in boiling water, under the tongue, in schoolroom.

A candle—its composition. The wick.

Candle under bell-jar over water; candle in narrow-necked bottle.

Chalk—where found; its origin.

Chalk—its treatment with acid.

Chalk—its reduction to quicklime with blow-pipe; lime-water.

Sugar heated in test-tube; wood heated in test-tube.

Sulphur heated in test-tube; lead heated in test-tube.

Magnet and iron filings.

The compass.

5.—SUITABLE OCCUPATIONS.

(Circular 374, to H.M. Inspectors.)

Sir,— Education Department, Whitehall, London, S.W., 17th March, 1896.

1. Kindergarten occupations have for some time been used in our infant-schools, and manual instruction has also been given to the elder boys in many schools for older children, while the elder girls have similarly been taught cookery and laundry-work; but the scholars in the First, Second, and Third Standards have, as a rule, had hitherto no manual training, except in so far as it has been supplied in the forms of needlework and drawing. Manual instruction is a valuable part of school training, and my Lords desire to encourage managers of public elementary schools to introduce, where circumstances permit, a suitable course of manual occupations for the three lowest standards.

Kindergarten occupations as used in the infant-school are not suitable for the children in schools for older scholars. The mat-weaving, stick-laying, embroidery, tablet-laying, and building with bricks or cubes, which serve to give young children ideas of form and number, as well as to train hand and eye, seem trivial to the ordinary child of nine or ten years of age. On the other hand, few of the common workmen's tools can with safety be put into the hands of children under the age of eleven.

2. An occupation ought to satisfy several conditions:—

(*a.*) It must be educative, and should especially stimulate independent effort and inventiveness. Any work that provides a real training for hand and eye is in a true sense educative;

but the most valuable work of all is that which imparts a knowledge of form, colour, and the properties of materials, at the same time that it fosters manual dexterity.

(*b.*) It should admit of being dealt with in a progressive course.

(*c.*) It must be attractive to the children, and afford a welcome relief to other studies.

(*d.*) It must not involve the use of needlessly expensive materials.

(*e.*) It must be capable of being practised in an ordinary schoolroom, without risk of harm to children or damage to furniture.

(*f.*) It must, in cases where the classes are as large as the Code permits, be so simple that it does not require an undue amount of individual attention. Large classes should, where possible, be subdivided for these occupations.

(*g.*) It should avoid a long series of preparatory exercises apart from finished results, and the finished article should be one that is attractive to a child. At the same time, the construction of articles for sale is undesirable.

3. The manual occupations satisfying these conditions which have been most commonly adopted as specially suitable for the First, Second, and Third Standards are: (*a.*) Modelling in clay. (*b.*) Modelling in cartridge or carboard paper. (*c.*) Cutting out in paper or other material. (*d.*) Drawing and colouring designs (some original). (*e.*) Brush-drawing from the object and from recent impressions. Other equally useful occupations may no doubt be devised, and any occupation that is proposed, if it is likely to prove satisfactory, will be readily accepted by the department.

4. It appears that the various manual occupations which have hitherto been introduced for the lower standards because of their suitability resolve themselves into exercises in the studies of (i) form, (ii) colour, (iii) measurement, which should be, where possible, connected with other subjects of instruction.

(*a.*) For acquiring a knowledge of form, the most effective occupation is clay-modelling. It demands accurate observation of the object which is chosen as a model, and the accuracy of the observation will largely depend upon previous instruction as to the build or growth of the object in its natural state. Sometimes a lesson on modelling has followed one on natural history or science; sometimes the children, after an object-lesson upon the formation of a fruit or the germination of a seed, have modelled the object, thus at once testing the correctness of their impression and driving it home. Clay-modelling has been used to illustrate the geography lessons; for example, the children construct a model of the river basin in which they live; and, again, illustration has been found for the history lesson in constructing a model of some neighbouring encampment, whether square or circular, Roman or British. As a knowledge of form depends upon a close observation of light and shade, a lesson in modelling greatly furthers instruction in drawing. Clay-modelling, however, lacks the charm of colour.

(*b.*) Colour may be studied in the following ways. When care is taken to provide a variety of tasteful shades of coloured paper, it is possible to combine the drawing, cutting-out, and mounting of a number of good designs, many of which may be in respect both to pattern and arrangement of colour the original work of the children themselves. The drawing may be done partly by aid of rulers and templates and partly freehand. The use of templates makes it possible to stamp on the mind certain beautiful curves at an earlier age than children can draw them freehand. This kind of exercise has been very fully developed by some of the officers under the London School Board. The advantages of it are that it promotes accuracy and good taste in colour and design, and also a sense of harmony and proportion. The defect of it is that the manipulation is somewhat monotonous, and that it does not lead to much increase of knowledge of varied objects.

(*c.*) Brushwork demands a clear perception of form and some knowledge of natural objects, and cultivates delicacy of touch; but it does not train the student to great accuracy or cultivate the sense of colour. Children, however, can express their impression of a flower, as, for instance, a bluebell and its leaves, much more easily by the brush only than by the pencil, and, if their observation has been very inexact, the error becomes obvious when they try to draw their impression.

(*d.*) As an exercise in accurate measurement, cartridge-paper or cardboard modelling leaves little to be desired. This work is an excellent training in exact measurement and in cutting true to measure, and it furnishes an elementary notion of construction. The manipulation, however, in this exercise also is somewhat monotonous. This kind of work lends itself readily to the illustration of instruction in simple geometry. The beginner may learn to cut out in cardboard, or, more readily still in stout drawing-paper, simple plane geometrical figures, and, after a time, he may proceed to simple geometrical solids. The cube, the cone, the cylinder, the wedge, the prism, and the pyramid can all be drawn, cut out, and put together without much difficulty. The manufacture of various useful articles, such as blotting-books, frames, trays, and the like, can be combined with the formation of geometrical figures.

(*e.*) As no one of the branches of manual occupation is complete when taken by itself, the most satisfactory results will follow where it is found possible to make them supplement each other.

5. Lastly, very great care is necessary in leading the pupils to acquire correct method in handling brushes, tools, and all the implements required. Another point which demands attention is that of the general posture of the children during their lessons. Where much stooping is necessary the work should be occasionally interrupted and a short extension drill given. Unhealthy and cramped postures should be avoided. Whilst fairly accurate work should be aimed at, you must beware of expecting very fine work requiring minute finish, or any work which is likely to strain the eyesight of young children.

6. My Lords have noticed with satisfaction that many of the larger School Boards have appointed superintendents or instructors of manual training, and have issued by their help excellent schemes of manual occupations for the lower standards. Some of these courses have already been published, and, while it is contrary to the practice of my Lords to draw up any lists of educational works, you may remind managers that particulars of such schemes can easily be obtained through the usual channels of trade. I have, &c.,

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