

## Summaries of Evidence.\*

### CLASSIFICATION.

The evidence has been arranged under the following heads:—

- A.—Officials of the Board of Education and of Local Education Authorities.
- B.—Persons engaged in teaching.
- C.—Medical Witnesses.
- D.—General.

A classified list of the witnesses is given below, and a list of their names in alphabetical order will be found on page 388.

#### A.—OFFICIALS OF THE BOARD OF EDUCATION AND OF LOCAL EDUCATION AUTHORITIES.

##### (i) *Officials of the Board of Education.*

*Important Note.*—It is to be understood that the opinions of the Board's officials, as here given, are their private views, and must not be taken to represent the opinion or the policy of the Board. Further, the time which has elapsed since the evidence was given causes some of the statements made to be out of date.

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\* It should be pointed out that much of this evidence was given some considerable time before the presentation of this Report, the attendance of witnesses before the Committee having necessarily been spread over a period of many months. It has therefore been thought necessary to state at the head of each summary the date on which the evidence was given, as the period which has elapsed since some of the evidence was given has already brought changes.

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## A.—OFFICIALS OF THE BOARD OF EDUCATION AND OF LOCAL EDUCATION AUTHORITIES.

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### (i) Officials of the Board of Education.

Mr. S. CARRODUS, Inspector of Handicraft under the Board of  
Education.

*Important Note.*—It is to be understood that the opinions of the Board's officials, as here given, are their private views, and must not be taken to represent the opinion or the policy of the Board. Further, the time which has elapsed since the evidence was given causes some of the statements made to be out of date.

*(Evidence given December 9th, 1909.)*

Witness explained that the bulk of his work was in connection with primary schools, but he was occasionally called upon to advise as regards Secondary Schools and the more technical work in evening schools. His work was confined to the north-west and east central divisions, unless specially invited to other districts. There were under the Board of Education at present only two inspectors devoted exclusively to Handicraft. His district contained about 300 Manual Instruction centres; formerly there were over 400, but he had recently been relieved of a part of the district. He inspected Manual Instruction in Elementary Schools as well as centres.

### THE GROWTH OF PRACTICAL WORK.

Witness said that the amount of Manual Instruction in Elementary Schools was rapidly increasing, and he was doing everything in his power to convince the teachers of its educational value. Without it much of the work of the schools was only indifferently well done and took more than a reasonable amount of time. He was greatly encouraged by the way in which the subject was being taken up, and by the attitude of experienced teachers in regard to it. He did not know of a single head teacher who, having tried it for a time, wished to discontinue it. The general opinion was that the children had been able to get a grasp of the ordinary work that without practical work would have been impossible. If that opinion gained a general hold, as he had no doubt it would, it should lead to the introduction of Handicraft into practically all Elementary Schools. Teachers were not being pushed by the inspectors, but were being convinced by their own actual experience of the value of the work.

## THE EQUIPMENT OF PRACTICAL WORK.

A great deal of practical work could be done in Elementary Schools without a workshop. In fact, much of the work at present done in workshops might with advantage be done in the classroom with only slight addition to the present equipment.

The great difficulty in providing workshops was the initial cost. For this reason the witness had endeavoured with the help of others to devise a scheme of practical work suitable to the general requirements of the primary school, which would be not less in educational value although very much less in initial cost. Experimental schemes were started first at Leicester, later at Manchester, and later still at Coventry. At Manchester the cost of equipment had been reduced to 8s. 6d. per place, and the cost of material to an average of 8d. per head per annum. It should be understood, of course, that these figures referred to the cost of equipping a "place," which in the course of a day would be occupied by several pupils. The witness was convinced after careful experiments that the educational value of the work was not less than in any centre where the cost of equipment was anything up to 8l. 10s. per head. It was such as to enable the schools to do most of the work that had hitherto been done in costly centres.

It was first necessary to choose suitable materials and then to get the simplest tools with which to work these materials. This principle of relying on the simplest tools had been carried so far that now the boys seldom asked for anything, even making some of the tools required. For instance, it was not uncommon to find a boy make a chisel out of a nail, or turn a pen-nib and sharpen that for a gouge. They had in some cases, by their own inquiries, independent of the teacher, discovered how to "case-harden" the chisels made. It was not suggested, of course, that it would be possible for the children to make all the tools they required, but it was interesting to observe that in these cases, having found the need for certain tools which they did not possess, they had had the ingenuity to make them for themselves out of simple materials in everyday use.

The experiments had not yet reached the stage of Metal-work. Very light Metal-work was about to be introduced, but it was not desired to push this until it was seen how it would work. The boys were given pairs of light snips and other very simple tools, rather as a means of extending their Wood-work than anything else. For instance, in the ordinary Wood-work course if a boy had to make a barometer stand he would stop short when he had shaped his wood, because he could not bend the glass. It was hoped that it would be possible to do such simple things as that, and gradually a sufficient number of tools was being provided to enable a boy to make simple science apparatus entirely by himself.

To limit a child's studies to one material was rather in the nature of specialisation. It was advisable to introduce the greatest variety of material suitable to the capacity of a child at any particular age, gradually increasing the resistance of the material through the various stages.

#### TEACHERS OF PRACTICAL WORK.

One of the great difficulties at present was the lack of qualified teachers: but there were plenty of suitable teachers who *could* qualify for "hand and eye" work, if not for "Handicraft." Lady teachers now teaching Handwork were doing good work, although they had no diploma. The Board of Education did not require a diploma for hand and eye work, but they did for the new Light Wood-work, as for any other form of Wood-work. This was unfortunate, because it could be done by a teacher of moderate qualifications, and the number of teachers was therefore unnecessarily restricted.

There was a certain amount of difficulty in providing facilities for the training of the ordinary teachers for giving Handicraft instruction. In Manchester the Local Authority's Superintendent of Manual Instruction had kindly given much of his private time to the training of teachers, and found that ten or a dozen lessons were generally enough to give an average teacher sufficient practical ability to make a wise start, after which their skill developed with their interest and experience in the work. Such means of training, however, were not nearly sufficient in themselves. The introduction of the subject into the Training Colleges called for early attention, because it was only by turning out young teachers familiar with the method, as well as the subject, that satisfactory progress could be made. While trying to improve the older teachers the foundation would be weakening unless the method, through the subject, were introduced into the Training Colleges in order to secure a constant supply of thoroughly competent teachers for the future.

As regards the training of artizans as teachers, witness said that fifteen years' experience had shown him quite clearly that the trained teacher, with sufficient knowledge of the subject, was much better than the craftsman with a fair knowledge of teaching. The essential thing was the teacher. Whereas many teachers by ten or twelve lessons in Handicraft could qualify themselves to make a good start, the artizan could not acquire a sufficient knowledge of teaching in anything like that time. At the same time, it was an indisputable fact that many artizans were expert teachers, just as many teachers were expert craftsmen. It was impossible to lay down a definite rule without exceptions.

All the members of the ordinary staff of schools should learn the principles underlying the methods of practical work, and should introduce them into the teaching of the ordinary

school subjects when suitable. It was not necessary that all the teachers should have any great competence in Handicraft; but it was desirable they should understand the method of practical work, even if not called upon to teach it as a subject, because their value as teachers of ordinary subjects would be greatly increased thereby. Where it is not possible for the teacher to give practical instruction in the classroom there should be a teacher specially qualified to give Manual Instruction in a room set apart for the purpose, and through which all the pupils of the school should rotate in turn. This specialist teacher would be able to carry the work to a higher stage than the ordinary teachers would be required to do, and would be able to select pupils who showed special ability for a more advanced course of Handicraft.

The employment of peripatetic teachers for Handicraft was not good. Instruction given by such means was often better than nothing at all, but it could not be regarded as satisfactory.

#### THE VALUE OF PRACTICAL WORK.

Manual Instruction should certainly be given in every Elementary School, and also in every Secondary School; but it need not be given to the same extent in the latter if it were done properly in the former.

There were two ways of looking at Manual Work—as a method of education and as a subject of instruction. The reason for the desire to introduce Handicraft into schools was the reason for the existence of the chemical laboratory in a more advanced stage. It should be the aim to steer clear of anything approaching purely technical instruction; any specialisation during the Elementary School period should be discouraged.

Handicraft was the medium through which the senses and faculties were developed. The hand was the fundamental sense, without which none of the other senses could be fully developed. It was essential to know the weight, texture, &c. of an object, and these could only be learnt through the tactile sense. Handicraft was the key that unlocked the whole situation and promoted the exercise of all the faculties. It was necessary to put the whole of a boy to school and not a part of him only. Up to the present he had been put to school only in sections, as it were.

An ordinary person could not think to a satisfactory conclusion without some tangible aid to thought. A child needed those aids much more than a person of mature intellect. The question might be put in this way: How could form best be studied—by analysing through one of the senses only, or through all the senses and so learning of matter in general and not in detail? The result of relying on memory only was seen in the fact that boys who had done Standard VI. Arithmetic did

not know what it meant: they might have learnt the rules of areas, but they could not find the area of a floor. Even the teachers themselves often did not understand the practical application of what they taught; for instance, a headmaster recently asserted to the witness that there was no difference between half a square inch and a half-inch square.

In Manchester some of the teachers who were not quite in favour of practical work a couple of years ago, but who were persuaded to introduce the subject experimentally, had found some of the Arithmetic which was formerly done with difficulty in Standard IV. now done easily in Standard II. If the same kind of effect was felt in regard to other subjects, it would mean that the introduction of practical work in primary schools was equivalent to raising the leaving age. If that was so, much of the work now done in Secondary Schools could probably be done in the primary schools, and so all the way through a higher standard could be attained than without practical work was possible.

The breakdown of the attempt made some years ago to introduce Handicraft was due to the fact that those who tried to carry it out did not know what was wanted. It was wrong, in the first place, to call the work "occupations." They lost sight of the fact that work done for its interest only, although valuable, was likely to produce a different result from work done because it had to be done. It was interest without discipline, interest without restraint, freedom without responsibility, and was little more valuable than that form of Brush-work that was so pretty and so easy that it was really not worth doing in schools.

One of the present difficulties was the fact that Handicraft was not begun in the Elementary School until 11 or 12, whereas it should be begun in some suitable form as soon as a child entered the senior school. If the only possible alternatives were (a) hand and eye work from 8 till 11, or (b) Wood-work from 11 till the leaving age, it would be much better to choose the former, because it was in the early years that so much could be done in so short a time. If sound habits of body and mind were not formed then, they could not be formed later.

"Hand and eye" work should be carried up to Standard IV., or the age of 10-11, after which should come "Handicraft." Much of the Handicraft now done in Centres could be done in the classroom before the age of 11. Such work being put in its proper place (for after all it was not much more than practical Arithmetic) would make it possible to take a greater variety of work, or to take some kind of work much further, in the Centre than was possible at present. Witness did not plead for the abolition of the Centre, but that it be put to its legitimate use as a means of solidifying work done in the classroom. The introduction of a practical method of dealing with some of the



ordinary subjects in the classroom would make the work of the Centre much more valuable than at present.

#### THE NEED FOR PRACTICAL WORK IN SECONDARY SCHOOLS.

The need for practical work in Secondary Schools was the same as in Elementary Schools, and until more was done in the latter the necessity for it in the former would continue. If the right habit of mind was formed in the Elementary School the necessity for Handicraft in the Secondary School would be less than at present. Even now, it was not essential to continue it right to the end of the course. It would, however, be impossible to fix a definite period at which it should be stopped. That would depend on the instruction in the primary school, the teachers in the Secondary Schools, and many other things.

The difficulty of introducing practical work as a method of instruction—not merely a separate subject—was greater in the case of the Secondary School than the primary school. The work was merely a means to an end—a means of developing a sound habit of mind and a love for and a habit of work. If the practical work of the primary school was well done it might be expected that the scholars in Secondary Schools would be able to dispense with that aid to thought to some extent, though never entirely. The necessity even for the method was probably not so great in Secondary Schools, or would not be when the primary schools all took practical work as an educational method.

Many Secondary Schools did not possess workshops ; it was desirable that these should be provided. Even where they did exist, the pupils often had not had the advantage of a workshop in the Elementary School. The consequence was that the work done in the workshop was not on a level with the ordinary classroom work and was therefore not a very valuable aid to the general work of the school.

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Dr. S. F. DUFTON, H.M. Inspector of Secondary Schools in the West Riding of Yorkshire.

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(Evidence given July 15th, 1909.)

#### THE EXTENT TO WHICH PRACTICAL WORK ENTERS INTO THE SECONDARY SCHOOL CURRICULUM.

Witness stated that the usual time given to Manual Instruction in Secondary Schools was  $1\frac{1}{2}$  or 2 hours a week.

In boys' schools Manual Instruction consisted almost exclusively of Wood-work, which is taken in practically all Secondary

Schools earning grants. A great many of the Public schools also had Wood-work as an optional subject, but in such cases it was more or less of a recreative character. Metal-work was taken in a limited number of schools—nearly all of the municipal type, but with some exceptions, such as Dulwich, which had an engineering side, Tonbridge and Oundle.

Gardening was not taught very much in Secondary Schools, though it was a very useful subject.

Clay-modelling was done in a few schools, almost exclusively with junior classes.

Cardboard-modelling was done to some extent in connection with Mathematics and Science, and was of great aid as a practice in manipulation and in giving practical notions of line, area and volume. It was much better to begin Mathematics with such work than with the memorising of tables. Children who did elaborate exercises in "reduction" were often unable to find the area of a piece of paper.

#### THE BIFURCATION OF THE CURRICULUM.

At Dulwich there were several "sides," namely, classical, scientific, mathematical, engineering, another which led up to the London matriculation, and an Army Class. Boys following the engineering side commenced at about 14 with a special curriculum containing a good deal of Manual Instruction, Science and Mathematics, together with a good course in English. Many of the boys in this side stayed till 18, and the majority of them were training for the engineering profession. Such courses were becoming fairly common in the Public schools. But in the ordinary Secondary Schools there was no movement at present in the direction of a bifurcation between the literary and the more practical work. This seemed to be quite a possible development. In all the newer schools there was a tendency to take only a single course, all the pupils passing through the same curriculum up to the standard of the matriculation. An objection to this was that with a broad curriculum it was impossible to reach a very high standard in any one branch. The greater Grammar Schools such as Bradford and Bedford were arranged on a different plan, there being several sides in each case, one of which specialised on practical Science. The age at which specialisation commenced at such a school as Dulwich (13 or 14) seemed perhaps a little earlier than was desirable. It would not be too early to start Manual Instruction as an optional subject, but there was no need to lay emphasis on the different subjects so soon.

There was nothing in the earlier part of the curriculum of the Public schools to enable masters or pupils to judge whether the latter ought to take up a curriculum based on practical work. The pupils did not enter these schools until rather late, and the weak point of the preparatory schools was that they did

very little Handwork or Science. This was no doubt due to the fact that the scholarship examinations for the Public schools were almost entirely on the literary side. The scholarship system tended, in fact, to prevent practical methods being adopted in the preparatory schools. This was not so much the case in, of course, schools which had a preparatory school of their own.

### EDUCATIONAL VALUE OF PRACTICAL WORK.

It was most difficult to say whether a practical side such as that at Dulwich was of great educational value, since "educational value" was almost entirely a matter of opinion. The presence of some practical subjects in the curriculum was, however, essential to all-round development.

### THE QUALITY OF THE TEACHING.

The teaching of Manual Work was gradually improving. The weak spot in all Wood-work was that the people who taught it were not, as a rule, of quite the same mental calibre as the other teachers. This arose at the outset from having artizans as manual instructors. Even now a large number of teachers of Handcraft were persons who had failed to qualify as ordinary teachers. For the most part the teachers in urban schools came from the same class as the Elementary School teachers, having obtained the City and Guilds Certificate. The rural schools often had to rely for their Manual Instruction upon the local carpenter. This was a difficulty that had to be met because brains were as much needed in this side of education as in the other.

The Wood-work instruction in England was plainly affected by the inferior class of teacher employed. In the usual way a scheme of models was drawn up and the scholars were required to reproduce them. No appeal was made to their inventive faculties. The proper way was to set a problem before a boy and let him work it out himself. Very little variety was found in the methods of teaching; most instructors worked on stereotyped lines.

There was no reason why good teachers should not be available, as it was not difficult to attain a high standard in Manual Work. It was not that the existing teachers were deficient in technical skill, but in imagination and in breadth of view. Great help could be given to the manual instructor by the active co-operation of the other teachers. It was absolutely necessary to get rid of the social distinctions between Handcraft and other teachers. These would disappear altogether if the right kind of Hand- and House-craft teachers were obtained, and the whole status of the subject would be improved. Probably a useful reform would be always to link the Manual Instruction

with some other subject. The manual teacher might take part in the teaching of Art, Mathematics or Science. In this way an interesting scheme had been developed at King's Lynn, where Wood-work is taught by the Art Master.

The boys made their own designs on paper and afterwards executed them in wood, with, in some cases, appropriate decoration. The results were very good and the boys' powers of imagination and invention were developed. The objects made were boxes, brackets, and other things interesting to the boys, and also scientific apparatus. The linking up of Science with Handwork was of great value, as it gave the pupils a much more practical outlook on Science.

Mr. W. C. FLETCHER, H.M. Inspector, Chief Inspector of Secondary Schools.

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(Evidence given July 15th, 1909.)

THE EXTENT TO WHICH PRACTICAL WORK ENTERS INTO THE CURRICULUM OF SECONDARY SCHOOLS.

Witness stated that practical work, in some form or other, was almost universal in Secondary Schools; but it was not confined solely to Hand-craft, so called. It played an important part in Science, in Art, and in other subjects. As regards girls' schools, the Board exercised considerable pressure to get some Handwork taught, and there were very few in which none at all was done. Many, however, did very little. Especially was this the case in the Girls' Public Day Schools, which had no afternoon session.

(a) *Science.*

In Science there should always be a certain amount of laboratory work, and it was worth inquiring whether the relation between laboratory work and Hand-craft might not be further developed. There was some danger of Science teaching becoming too bookish. The work, instead of being confined to mere observation and study, might include some actual construction of the apparatus used. This kind of work was probably not cultivated nearly enough in schools; but the possibilities it offered were of great importance in considering the question of Hand-craft.

(b) *Drawing.*

Drawing was taught in all Secondary Schools, but sometimes to a very limited extent. Though no subject was absolutely compulsory, the Board practically insisted upon a course of at least two years, from 12 to 14 years of age. If a school did not

see its way to do more than that, the Board would not usually contest the matter. It was common to find a school where Drawing was not carried right up to the top of the school.

Drawing was not a subject that could be well taught by a master who had not had some special training for it, unless an expert was at hand to give help. Consequently it was frequently very badly taught, more especially in the poorer schools. It was a question whether in such cases it would be better to allow the subject to be dropped altogether unless the teaching could be improved. On the other hand, a great deal of really good Drawing was done, and there had been a considerable development in the teaching of this subject in recent years.

Drawing was often done in connection with Nature Study and frequently excellent results were obtained. To some extent this might help to compensate for deficiency in the general teaching of Drawing; but Nature Study was mostly taken by the younger children, whereas Drawing was expected between 12 and 14. Good Drawing was also found in connection with Botany for girls, and Science.

The linking together of Drawing and Handwork was very important. An interesting development in this direction in girls' schools had been the application of the pupils' designs to Needlework.

#### (c) *Wood-work.*

In boys' schools Wood-work was almost universal. Few, if any, girls' schools took it. This subject was encouraged in the first place by the offer of a special grant of 7s. a head; but later it was made very nearly compulsory. A few boys' schools still did not take it, generally because of lack of equipment; but the exceptions were very few.

The course usually extended over the two years between 12 and 14, with one lesson of 1½ or 2 hours duration each week. Sometimes a third year was given, and occasionally even a fourth; but more generally Wood-work gave place to Metal-work after the second year, when more than two years were given to Handwork.

Wherever Wood-work was taught, a workshop of some sort must of course be available. The character of the equipment varied; but with a few exceptions it was good. In many cases there was no manual room in the Secondary School itself. In some of the older Secondary Schools it was a practical impossibility to add a workshop. Tin buildings had been erected in some cases, and in others the pupils went to some other school, often the Technical School, for this subject.

#### (d) *Metal-work.*

There was not a great deal of Metal-work in the Secondary School curricula, and where it was taught it scarcely ever (if at all) took the elaborate form in which it was found in America.

This was partly because the work was very costly, and partly because the time could not be spared. The naval schools at Osborne and Dartmouth were the only places in which it was carried to any extent, and where it was at all comparable with the work of the American Manual Training High Schools. Generally, it was not introduced until the third or fourth year of the Handwork course, though occasionally it was taken from the beginning.

(c) *Gardening.*

Gardening, more or less in the nature of a hobby, was taken in a fair number of schools, chiefly for girls, and very often a little Gardening was taught in connection with Botany. In only about a dozen schools, however, was there anything really serious in the way of an agricultural side. There was a great danger of instruction of this kind falling into the hands of an inferior teacher, and it therefore required very careful watching.

(f) *Domestic Subjects for Girls.*

Needlework was found in nearly all girls' Secondary Schools. Cookery was less common; but still a good deal of it was done, and sometimes Laundry work was taken. Other Domestic Subjects were sometimes included, variously styled Household Economy, Housewifery, and Domestic Economy.

It was not usual for more than  $1\frac{1}{2}$  or 2 hours a week to be given to these subjects, except in a limited part of the school. On the other hand, it was much more common to find them carried right through the school than in the case of Hand-craft for boys. Apart from the short school day in some girls' schools, the fact of the girls working for university and other examinations made it almost impossible to find time for Domestic Work. There was a distinct tendency to drop Domestic Subjects at the top of the schools in the case of the more academically-minded girls.

In the High Schools Domestic Work ceased as a rule (as a compulsory subject) at 14, but was continued after that age as a voluntary afternoon subject. Sometimes a good deal of this afternoon work was done. In some of the Girls' Public Day Schools the only Domestic instruction was Needlework, and very little even of that was done. But the schools were beginning to supplement this deficiency by means of a special department at the top of the school for girls from about 17 and for those who had left the school and returned for a course of one or two years in Domestic Economy, with a certain amount of literary work. At present only quite a few schools had such departments. A few others, however, were trying a scheme of a rather less ambitious character, having instituted special courses, almost purely domestic, for girls from 15 to 16 or 17 years of age. A school of Gloucester had introduced an arrangement

of this kind. The course was taken by about 20 girls, who were given a large amount of responsibility in their work. They cooked dinners for a large part of the school and were charged with keeping certain rooms clean and tidy. Grants were payable for pupils in such courses so long as they were not over school age, and even if they were above that age grants could still be claimed under the Technical Regulations of the Board.

A fair number of schools were trying to develop the Domestic instruction as part of the general curriculum to be taken throughout the school. One of the best instances of this was the Haberdashers' School at Acton. From the First to the Middle Fourth Forms, that is for girls of from 8 to 14½ years of age, one hour a week was devoted to Needlework. After that an hour and a half a week was given to Domestic work, including Cookery, Housewifery, Dressmaking, and Laundry work, both Cookery and Laundry work being correlated with Science. An important question upon which guidance was needed was how far Domestic Subjects should be correlated with Science.

(g) *Manual Instruction for Young Children.*

Wood-work was occasionally taught to boys below 12; but the weak point in regard to Handwork was that there was very little suitable provision of it for the children between 8 and 12. The general opinion was that boys below 12 had not the strength to cope satisfactorily with Wood-work. A softer medium was required for them; either cardboard or clay.

Modelling for little children, generally in plasticine, was not uncommon in Secondary Schools, especially for girls. There was often a weakness in this respect in boys' schools, there being very few men who could really make anything out of Handwork for boys below eleven.

Cardboard work was growing, and in some form was now quite common in Secondary Schools. It was used a good deal in the teaching of Geometry, and took the place of much of the old oral teaching, the boys being made to understand what they had to do and then left to do it themselves. On the other hand, cardboard work was sometimes of a more elaborate character, in which case more teaching was needed. It was a question how far this elaborate work was desirable for young children.

#### METHODS OF TEACHING HAND-CRAFTS.

As regards the methods of instruction in Wood-work, the accepted doctrine of the schools and of H.M. Inspectors was that Wood-work ought to be done from carefully finished drawings. It was worth considering whether it was advisable to insist upon this in all cases.

There were two opposing schools of thought, which might be termed the Sloyd school and the City and Guilds school.

The methods of the latter (more or less modified) obtained in the great majority of schools. In such schools the work was mostly rectilinear, consisting principally of planing, sawing, and chiselling in straight lines. Sloyd work brought in modelling which was not found in ordinary Wood-work. Sloyd work was not popular, though it had undoubtedly influenced the work generally. This was partly due to the fact that the models generally used in connection with it were Swedish models which had no interest for English children. Occasionally a teacher got over this difficulty by designing his own models.

A course of Wood-work often consisted entirely of simple exercises. Such a course could be conducted by a teacher who had himself not taken the subject up at all thoroughly. Mere exercises were certainly of great value; but a course of this kind had serious limitations, and it had to be considered how far it was desirable. Some teachers were trying to get something less narrow and more interesting into the course.

#### EDUCATIONAL VALUE OF HANDWORK.

The educational value of Handwork when well taught was very considerable. The great thing was accuracy, and (most important of all) accuracy that a boy could judge for himself. Thus, if he set out to make a dove-tail joint, and the joint did not fit, his inaccuracy was self-convicted. In this respect Wood-work differed essentially from the ordinary school subjects.

It was difficult to ascertain how far Manual work, as a new subject, succeeded in bringing out otherwise backward boys. There were no doubt occasional cases where this happened; but as a rule it would be found that the boy who did his other work well was the one who succeeded in his Manual work. It did not appear that Manual work had as much effect in Secondary Schools in bringing out the weak and dull boys as might be expected. For experience in this matter it would probably be necessary to go to teachers in Industrial Schools or such schools as the Shoreditch Technical School, where Manual work is more fully developed. In Secondary Schools the time allotted to the subject was not sufficient to take it much beyond simple exercises.

There did not appear to be any attempt made in Secondary Schools to distinguish between the more intellectual boys and those who were more likely to profit by manual than by mental work. It was a policy which was quite possible of development. The Board of Education could legally recognise any type of instruction under their Regulations. No Trade Schools were at present on the list of recognised Secondary Schools, but the question of the recognition of such schools was under consideration. They already received grants under the Technical Regulations.

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Mr. E. M. KENNEY-HERBERT, late H.M. Inspector of Elementary Schools (Buckinghamshire), Divisional Inspector for the East Central Division.

*Important Note.*—It is to be understood that the opinions of the Board's officials, as here given, are their private views, and must not be taken to represent the opinion or the policy of the Board. Further, the time which has elapsed since the evidence was given causes some of the statements made to be out of date.

(*Evidence given November 10th and December 9th, 1909.*)

The witness said that his duties were confined to Elementary Schools; but the problem of educational Handwork was essentially the same in Secondary and Elementary Schools. The bulk of the schools in his district were country schools; but a fair number were town schools, some of which were fairly large. In fact there were excellent examples of every conceivable type of Elementary School.

#### HANDWORK IN ELEMENTARY SCHOOLS.

##### (a) *Handwork as an Educational Method.*

The witness said that he was struck some little time ago with the idea that the present system of elementary education was doing a great deal of harm to the children, in not encouraging all forms of Handwork, within the limits of school life and opportunities, and all forms of recreative treatment of lessons. The first thing that brought home to him the need for a change was recognition of the sense of chill that fell upon the little children when they left the Infants' School. As Infants they had a happy life at school; but when they left the Infants' School they were overshadowed by formality; they became formal members of formal standards, taught in a formal way. In Standard 1 the children at once began to receive formal teaching by means of long lessons in Arithmetic, definite teaching of Geography, and observation lessons which were simply harangues by the teacher on various objects (natural or artificial). All lessons were formal and long, lasting from half to three-quarters of an hour instead of from twenty to five-and-thirty minutes. This was the position the witness found to exist in the schools of his district when he first began to take an active interest in this question, and it was still the position in the great mass of the Elementary Schools. The gulf between the Infants and the upper school was too great. It was all quite wrong. The school must under such conditions be a miserably dull place for little children, and must have an effect which was paralysing rather than enlightening. Teachers consulted by the witness agreed that this was so. He, therefore, set to work to find out whether such a condition was remediable—roughly whether the younger children in the upper school

could not continue to be dealt with on infant lines, though of course with more advanced work. It was certain that the whole thing did not begin and end with Manual work. The whole of the child's life in the lower standards should be very much the same as it had been in the Infants' School, only of a more advanced scale. The witness, therefore, proposed to the the teachers that "junior sections" on these lines should be established, the work of which should include Manual work of all kinds, but also, beyond that, everything that meant that the child was to be at work, his little intelligence and body on the move, and that instead of formal lessons, the teaching, no matter what the subject, should all be practical and of the kind to encourage the child to think and speak. The Arithmetic should be made more practical; much should be made of Hand-work in connection with ordinary lessons; the observation lessons should be lessons in which the children should observe for themselves; and the children should be encouraged to stand up and talk—to tell a story, for instance, or describe something that they have seen.

Formal teaching had now been practically given up in the lower standards. The development of the system being left to the teachers, there had been great variety of treatment. In some schools the little children had no written Arithmetic at all; in others there was a certain amount of script Arithmetic. The whole of the teaching was in the direction of practical work with practical things, such as shop-keeping, measuring, weighing. The whole of the Arithmetic from beginning to end dealt with things within the child's own reach, placed before him in the way of a game rather than a lesson. These methods had had an extraordinarily good effect. Other features were picture lessons, conversational lessons, story telling, dramatising history stories or recitation, dancing (in connection with physical exercises), geography, games, &c. Children told their own stories; the others listened to them, and then told them again. Composition was taken almost entirely in that way, which encouraged a good deal of confidence and self-reliance.

In the picture lessons, the child gave an accurate description in its own words of what it saw. Thus: "I can see in that picture a pond, and in the pond ducks, and one duck a white one," and so on at length. In the old days the children could not describe anything, and all they said had to be dragged out of them. By the new methods they had acquired a real spontaneity. Even in many of the smallest schools the children were just as bright, and were developing most interesting powers of speech and of description.

The new method entered into all sorts of things, and made the children brighter. Discipline was not the same thing as it had been; the school became a happy family. The children lived and bubbled over, and all the time they were receiving a vast amount of sub-conscious teaching. The difference these

methods had made to the children's eyes was perfectly delightful. The old heaviness had gone; bright eyes and smiling faces had taken its place. No opportunity was lost in the direction of the use of the child rather than the use of the teacher. Such methods, of course, meant much more work for the teachers; but they also meant a happiness and a purpose in their school life to which they had hitherto been strangers.

As an example of the change that had taken place in the schools, the witness handed in the Inspector's "Notes of Visit" to one of the schools. The school in question was a large girls' school, and the head teacher was of the old type, who did things strictly by rule, a strict disciplinarian (though not unkind) who dared not let the children go. She came under the influence of these new methods, which were quite contrary to all her ideas, and though she felt great anxiety as to how things would shape, she determined to make the experiment. The result was interesting, as showing how such a teacher could tackle this new kind of treatment. [The "Notes of Visit" are printed in an addendum to this evidence.]

In another school, opened recently, the head teacher was a man who taught on the old-fashioned lines. He soon recognised the possibilities of the new methods, and nine months after its opening the school had become an "observation" school for the county, and was visited by many inquirers. One of the classes would be arranged as a milk shop, one child being the cashier, another the measurer, and a third the customer. Each child had a piece of paper on which it wrote down all the things bought or sold, and the children talked all the time, discussing the prices of the various commodities. Another class would be a drapery shop, measuring silk and ribbon. Another a grocery shop, weighing, and so on. In all this play the children were really doing sums of a fairly difficult kind: but they were dealing with real things. In some classes this kind of thing comprised the whole of the Arithmetic done, *i.e.*, the children did no written Arithmetic at all in (say) Standards 1 and 2. In the particular school referred to these methods extended to Standard 3, and in one school they were even carried to Standard 4.

Of course, this sort of thing could not be done in one stroke. It had to be begun at the bottom, and gradually extended upwards. In dramatisation especially, the older children who had not grown up with the system from the bottom of the school were too self-conscious. But the others simply took it in their stride. Manual instruction, of course, was the basis of the whole thing, but it was not limited to the making of things from a model. It entered into all the other work of the school. To begin with, these young children should have Paper-folding and Modelling in plasticine, &c. These occupations had obviously very good educational effects on the little children. They improved their powers of observation, of expression, of

touch, and accuracy. It was necessary that the child should do its work because of its interest, and not because it was forced to do it. It was the sub-conscious effect of the work that had such a good effect on little children.

The idea of Handwork as an educational method was more or less running right through Buckinghamshire; but it could not reach its full development everywhere because of local circumstances and of the lack of rooms and staff. In some cases it was quite pathetic to see the efforts made by both teachers and children to carry out this work without proper equipment. But even with only plasticine and cardboard the greater part of what was needful could be done. A different atmosphere could be created in the school, a different eye in the child, and a different interest in everything. The witness was of opinion that work of the kind now being done in the county, without any elaborate apparatus, could by itself be made to produce all the effects he desired to see.

#### (b) *The Influence of the Teachers.*

Of course the success of this kind of work depended on the staff to a great extent. It was not possible in a small school with one teacher and a monitor to do the same class of work as in a larger school; but there was now not a single school in the whole county of Buckingham in which some Handwork did not go on. The moment a new teacher was appointed to a school in the county the inspector paid an advisory visit to that school, and the whole question was discussed confidentially and freely. So the new teacher fell into line with the rest.

As soon as the teachers once realised the intention of the system they soon picked it up and then took a hearty interest in it.

The principle on which the work was introduced into the schools was that the teacher was the person who had to develop the whole thing. Each teacher was allowed to develop his own scheme of work in his own way. That was the spirit of the whole thing, and the work was all the more successful for this reason. Consequently while the principles were the same in all the schools the teaching itself was quite different. The teacher was approached, and, in a friendly discussion, was made to understand that the lines upon which the little children should be educated were those which would make them talk and be accustomed to speak out. The time table was in a much more general and less rigid form than had been customary, and so far as the witness was concerned no one troubled very much about the exact number of hours given to each subject.

#### (c) *Handicraft.*

The Handwork started with plasticine in the lowest classes, and then in a good many places went on to work in carton

paper. This material lent itself to constructive work of a simple kind. The next stage was cardboard work where real construction came in, and the pupils made their own diagrams and their own measurements. This led to the knife and Wood-work (a kind of Sloyd); but so far there was not a very great deal of this done, though it is growing. Handwork of every conceivable sort was done in the county Elementary Schools, and a school was considered behind its fellows if it did not try to do something of the sort. A few weeks ago a great conference was held on rural education in Aylesbury, attended by about fourteen or fifteen hundred managers, teachers, and others, and a large hall, adjacent to the Town Hall in which it was held, was barely large enough for the display of exhibits from the 70 schools in the county which had sent in specimens of work, including examples of Drawing of all kinds, the produce of gardens (there were 55 school gardens in the county), specimens of Modelling in plasticine and in clay, Carton- and Cardboard-modelling, Wood-work, and other Handwork of all kinds. This was remarkable when it was remembered that there were only 240 Elementary Schools in this county, and that two years ago these schools had never touched this work.

Some of the smaller schools were limited to plasticine work, because the supply of material was dependent on the Authority and the work cost something, the rates were high, and they were still in the experimental stage. Still the Authority had backed up the scheme from the start, having voted £100 for material the first year, with the promise of another hundred the following year, and had also instituted classes for teachers.

Having instituted plasticine work in every school, the next step taken by the authority was to give a grant of money for the equipment of 70 schools with "carton" paper and cardboard, together with the tools necessary for working them, viz., scissors and knives. The number of schools doing this work was growing, and any school showing itself sufficiently capable was placed on the list. The authority further supplied knives for use in light Wood-work wherever they thought this could be done with anything like success.

Throughout all this work there must be directed instruction as well as "free expression." The children must learn how to make certain things; but that was only the grammar, and the other things were the composition. They would not keep on making the same thing, but as soon as they got the idea they would apply it to other things. They should be given the opportunity of suggesting their own models, and should mend the easels, make chalk boxes, &c. It made a vast difference if they thought they were doing something useful. First of all it was necessary to encourage the power of observation by letting the children produce something they had before them. Next they should produce something from memory. They might be told to keep their eyes open in the morning and to do something

from memory in the afternoon. Thirdly, the ordinary lessons should be illustrated by means of practical things. In Geography, for instance, in the lower classes the children might be taken out to look at things, such as valleys and hills, and then come back and reproduce them in plasticine. But in addition to memory work the children should be allowed to make anything they liked, so long as it represented something real. In this way their power of initiative and imagination was developed.

There was no reason why eventually Handwork should not be continued throughout the whole course so long as it was used not solely for producing models, but for illustrating the whole of the work. While it could be used in that way, *i.e.*, as the need for it arose out of the lessons, it should not be dropped. The need for it was certainly greater at the bottom of the school than at the top; but where it could be carried right through, so much the better.

This work was not like a new subject added on to an already full curriculum. It was rather a new way of treating the old subjects. It was not necessary to set aside a certain definite period for Handwork; but there was no reason why the period set apart for (say) History should not, if desired, be occupied by illustrating practically what was learnt at a previous lesson or would be learnt at the next. The teacher should have perfect liberty to connect up the Handcraft with the rest of the work.

In each class all the Handwork was taken by the class teacher. These, of course, were not all experts in this kind of work; but the complete association of the class with its own teacher—the family feeling as it were—was so important, that even if the work was sometimes rather inferior in quality, its general effect was better than it would be if taken by a special teacher. Besides the aim was not to produce the best thing that could be produced, but to illustrate the other work, to interest the child, make it understand, and to encourage it to do its best, though that “best” might fall short of perfection. So far there had been no disappointment, which was probably due to the keenness with which the teachers themselves took the subject up and to the altered view they took of their responsibility towards their children.

In the light Wood-work the principal tool used was the knife; but other tools were also used in some of the schools. Saws, planes, hammers, and other tools were certainly used in some places, but the witness was unable to say to what extent, as this work had only just been started. It was a question what ought to be covered by light Wood-work. The witness' own opinion was that the best plan was to let each school run on its own lines. Then after practical experience it might be possible to say what was the best.

In one of the Slough Schools the light Wood-work was done with strong twigs cut out of the hedges and put together with hammers and brads. The children made garden seats, rustic

arbors, ladders, gates, &c. Every pupil drew his own plan, cut his twigs to the proper length and put them together with brads. This work had an extraordinary effect upon the children, and cost practically nothing. In addition, Wire-work had recently been introduced into the school. All the things made were of course toy things, but made with a real educational purpose.

In some of the Manchester schools a very simple form of light Wood-work had been introduced. The boys simply walked to a cupboard in the classroom and took each his set of tools and a slab which he fastened on his desk; and in two minutes they were ready to start. The cost of these trays and tools was about 7s. 6d. a set, but even this amount was too much for an agricultural county with a high rate. Of course, each tray and set of tools could be used during the day by a number of different children, so that 7s. 6d. did not represent the cost per child, which would be considerably less.

Seven schools in the county had undertaken light Wood-work, for which special grants were given this year for the first time. The material used was a specially prepared wood. The grant was 2s. 6d. a head, which went a long way towards paying for the material, and to make matters still easier the maximum number allowed in a class had been extended from 20 to 30. Each child had a knife. The classes had only just been started, so that it was impossible to comment upon them. The witness intended to visit them shortly to see what the purpose was—whether it was educational or merely constructive. He was particularly anxious that it should not show merely abstract construction, but should be associated with various sides of the ordinary school subjects, and with the home and school life of the children.

Gardening was brought right into the school curriculum. The children were asked to draw plants in various stages of growth, to keep diaries of their life in the garden, to write composition on the work done, to keep profit and loss accounts and so on. The gardens themselves were quite close to the school buildings. The witness was anxious to see a combined course of Gardening and Wood-work. Such a course would be invaluable. All the Carpentry might be rough, but it should be very practical. From September till March, the pupils should be in the workshop as a rule, but on fine days they might do the necessary trenching and manuring; similarly, from March to September, the garden would have the first claim on their time, whilst on wet days the workshop would be available for making and mending things required for the garden or the school. The whole thing would thus be linked together.

There were a number of small mixed schools where the only teacher or teachers were women. In such cases a course of this kind could not be undertaken. But the witness had

visited one school where, although the Gardening itself was taught by a gardener, the mistress saw that it was brought into the school. Only in very exceptional cases, however, could such a course be made practicable. Some mistresses managed to introduce the growth of plants into the school, but not the gardening proper. The witness did not know of any instance of a mistress taking charge of the Gardening work herself. As regards Handwork in the lower classes the boys and girls to a great extent did the same work; but at about standard 4 the girls began to do rather more Needlework, and as time went on they gave more time to Domestic Subjects. There was great necessity for practical work on educational lines in the form of Cookery, Laundry, Housework, &c. The practical training of girls was of primary importance. Even in the country schools a certain amount of progress was being made in this direction, and there were a good many simple Cookery classes in some of the smaller schools. The idea of taking the children from their school and giving them a month's course consisting exclusively of practical Domestic work would, in the witness's opinion, be very useful; but he was anxious to see the teachers' own influence amongst their own children in this direction. That would come as soon as the Training Colleges fell into line.

Until quite lately nothing had been done to make the Needlework instruction more stimulating; but the recent issue of the "Suggestions for the teaching of Needlework" by the Board was already producing excellent results. The outlook was favourable, although there was a serious difficulty in the way of reform, owing to the antagonism of the old-fashioned teacher who remained faithful to the old-fashioned specimens. However, the reform would come in time, and this subject also would be made as practical as possible. The children would at quite an early age be put to make practical things, such as dolls' clothes. Even if they did not make them well, they would begin to learn the value and the economy of material, and something of the delight that comes from making things "of their very own."

#### MANUAL INSTRUCTION CENTRES.

A Manual Instruction centre had just been opened in Aylesbury, and another one was to be established in Slough. Witness was of opinion that a special room on the school premises was preferable to a centre, not only because it was more convenient, but also because it was necessary that the manual teacher should be a member of the school staff, and that the instruction should bear upon the needs of the scholars of the school. The centre had filled a useful position at the start and excellent work had been done in many directions; but owing to the lack of freedom of treatment, it failed in providing opportunity for initiative on the part of the child. A great



deal of time, for instance, was spent on Drawing which was not absolutely necessary, and the cult of the rigid model was fatal to development.

Another danger of the centre system was that the head teacher got the idea that the subject was taken away from him altogether. When his pupils went from the school to the centre the headmaster had no idea what they were going to do there, and had no right to inquire. This cut at the root of the whole thing. It was desirable to associate the headmaster with the centre and give him an interest in it.

It was better to have the work done in the school itself even if it was of a rather simpler character than that which could be done in centres. The schools did not need very advanced work. It should be understood, moreover, that the work was to be part of the school life. At the same time, however, it was desirable that every school should have its handicraft room, but the work done in it should not be limited to Wood-work. The ideal thing was to have every school self-contained. The great difficulty in the way of this was, of course, the extra expense of having a separate room and apparatus and instruction for each school.

#### HANDWORK IN SECONDARY SCHOOLS.

Witness considered that Manual Instruction should be taken regularly in Secondary Schools and should not be confined to special boys. Some little headway was now being made in the witness' district, but only a small amount of real good had as yet been done. The Board were always reluctant to push the subject, and the headmasters were rather inclined to scoff at its value. It was a difficult subject, and did not lend itself to any of the public examinations; this in itself was enough to crush it out of the curriculum. Consequently, it found a very small place in the curriculum of Secondary Schools, and had far less influence on education in those schools than in Elementary Schools.

Witness was emphatically of opinion that Handwork should be taken in Secondary Schools as an educational subject. The apparatus should be quite simple. The work might begin with plasticine work in connection with Geography; and cardboard work, introducing the idea of volume, proportion, and construction. The next stage might be Wood-work with the knife, but wood was such a different material from the others that before any good could be done with it, it was necessary to learn something about its qualities, *e.g.*, its hardness, grain, &c. This would form the initial stage of a further treatment of wood with more advanced tools.

Work of this kind was just beginning to be done in Aylesbury. At present little progress had been made with the higher forms of light Wood-work, but it was perfectly certain to spread. The elementary stage was moving slowly from class

to class, and so long as the work was of the right kind it was not desirable to try to hurry the Authority too much. They had already done much, having built five new Secondary Schools, extended two more, intending to build a sixth, and having set two others in order.

The lack of premises was a difficulty in some cases, as many of the old schools were not fitted with manual rooms. A great deal could, however, be done without a workshop. This matter, in fact, was not primarily a workshop question at all, and often the simpler forms were a great deal more valuable than the heavy work, in which boys sometimes spent a whole morning on such operations as planing wood. A further difficulty was the fact that the governors often did not understand the work; they did not understand what an enormous influence it had on the children's intellects. They did not realise that, if it had such an amazing influence on defectives, it must have a still greater effect on the normal child. It was really wonderful what an effect it had upon the development of the intelligence of the pupils.

#### THE TRAINING OF TEACHERS IN HANDWORK.

A commonsense course for teachers was carried on by the county authority by means of Saturday morning classes. This scheme had met with some opposition from the National Union of Teachers; but the teachers themselves flocked to the classes.

It was surprising how quickly they took to the idea. After half a dozen lessons they had learnt sufficient to carry on the work on thoroughly efficient educational lines, that is, to enable them to go and learn with the children—an essential thing in education. It did not require a long course with an examination at the end. They simply came to the classes, saw how the work was done, and went away and did it. It was not a thing that needed sitting up late at night; it could be taken in one's stride. The chief thing needed was encouragement from those looking on, and enthusiasm in those doing the work. Those of course who wished to teach the higher forms of Handwork had to take higher instruction. The best teachers were naturally those who were practical teachers to start with. Given such teachers it was amazing how they improved, with a little encouragement from those who visited the schools.

The men chosen to teach these teachers' classes were men with a great knowledge of the work. The Authority were fortunate to get such men; but it was not so difficult now as formerly to get the right men; 10 years ago they could not have been found.

The real settlement of the Handwork question lay with the Training Colleges. So far they had not helped at all in Domestic Subjects. They had done a certain amount in Woodwork, but not particularly well.

In so far as the underlying principle of this subject was an educational method which should govern the teaching of almost every subject in the curriculum, it was desirable that it should be taken in the Training Colleges in a simple way with the purpose of teaching the method and not any new subject. At the end of their training the teachers would go out as ordinary members of the staffs of their school, and not as special centre teachers. The whole success of the work depended on the influence of the school, which ought to be self-contained, with a definite purpose from the lowest to the highest.

There was a stage of Handwork, however, at which it became something more than a mere method of education, and therefore those students with the inclination to do something more should be given a further opportunity of studying this special work. As to whether the third year of training might be utilised for this purpose, the witness said that unfortunately very special reasons had to be found for that third year, though in particular cases it might be used for special work. He considered, however, that this work ought to be taken in the Training College as a matter of course, without strain upon anyone, if half the time now spent in the carpenter's shop was spent in learning the simplicity of Handwork of various kinds. This amount of time would cover the ground most comfortably. Teachers coming to the Saturday classes were able in less than eight lessons to take this work up; so it could certainly be done in the Training Colleges.

Similarly, for those meaning to take up the higher stage of Domestic Subjects, some further training would also be needed.

The idea was that eventually there should be on the staff of every school one teacher who could give a lead in this direction. For this purpose the third year of training would be all the more valuable. It would be of very great advantage to have one member of the staff who could inspire all the rest, and make them see how easily this handwork method was applicable to all the subjects of the curriculum.

For teachers already in school the best thing to do was to take summer courses in Handwork.

To make a real success of Handwork in the Secondary Schools it was absolutely necessary that the teacher of this subject should be of the same social position as the other members of the staff, and should have had a proper training as a teacher. Otherwise he would not be in a position to exercise much influence over the other teachers.

#### ADDENDUM.

The following "Notes of Visit" made by the Inspectors at an Elementary School were handed in by H.M.I. Mr. Kenney-Herbert, when he gave evidence before the Committee. Mr. Kenney-Herbert's object in supplying these notes was to show that "Practical Work" in a good school was not a

separate subject, but was interwoven with, and underlay the whole instruction of the school:—

The Headmistress has risen well to the new order of things—deserves high praise—no easy task for her to shake off the old strict and formal methods. It is all to her credit, therefore, that she has done it, and done it in a year.

This Girls' School has stepped quite into the front rank. We are entirely pleased with it—have never found it so thoroughly efficient as this year—hardly a weak spot in the whole school. High aims have been set up in the teaching of each and every subject, and high success has been reached everywhere—a capital school indeed, which it would be a delight to show to any enquirers in search of sound modern methods, indeed.

Above and behind all this, moreover, is the splendid influence—moral influence—which surrounds the girls. Character-making is a prominently fine feature: the corporate life of the school is excellent, the girls seem proud to belong to it, and exert themselves to a special and unusual degree in all their lessons. Their naturalness, their vivacity, their intelligence and keenness, strike us most forcibly. The Headmistress deserves our warmest praise for what she is doing, and so do all her assistants.

We have voluminous notes, all in the commendatory vein, but it will not be possible to enter them all on this sheet.

#### *Arithmetic.*

The "practical" Arithmetic is, everywhere, truly practical—few schools can show anything better in thoroughness and soundness of aim. Class 2, for example, were making practical acquaintance with areas by means of diagrams drawn by every girl on her desk—understood well, too; then they rose from their places and "attacked" attendance board, partition panel, blackboard, window pane, bench, desk, classroom door, partition door, map, &c., with measuring implements, and accurately recorded on paper their findings—businesslike way—valuable. Class 1 did similar work, but with this addition, that they first eye-judged dimensions of various objects, then recorded in writing their estimates, then verified by actual measurement what they had done: thorough work. In Class 3—area, practical teaching by diagrams—excellent written work based on actual measurements. Class 5, Number story idea, practical parts one-sixth, one-eighth: one girl out in front of class conducting it—attention and clearness, expressiveness of speech, remarkable. The Student Class had constructed paper geometrical models from a study of their text books, with ultimate idea of finding their outside areas, contents, &c. Written Arithmetic of 4 (*b*) dealing with "groups" (a sort of division sum)—their findings, written, very clearly expressed: 4 (*a*) almost as good—perhaps the definition might be fuller.

#### *Cookery.*

Two 1st Courses } Three relays of girls going on Tuesday a.m. and p.m.,  
One 2nd Course } Thursday, a.m.

#### *Handicraft.*

Plasticine Modelling in Junior Section. Paper Modelling in Junior Section and also in Class just above. This method of treatment will be extended upwards.

Organised Games in all classes— $\frac{1}{2}$ -hour each week.

#### *English and Composition.*

Class 1 on "Noun Clauses"—very good teaching; girls did the real thinking, not Teacher for them. Class 4*a*, Composition good as far as it went, but advised Teacher new as to special value of "original" sort.

Class 2, Word-lesson—dictionaries used and girls know what the books are for.

Class 1. Dictionary use—a capital lesson—girls use their dictionaries with understanding.

In this Class I also heard a Debate (this feature comes once every third week) entirely managed by the girls themselves, one acting as "President of the Union," on "Why should not cats be taxed as well as dogs?" Quite interesting—"brings out" the girls (they have previous notice of the subject, and meanwhile think the subject over). Other subjects they have discussed are "Motor Cabs, advantages and disadvantages," "Aeroplanes" and "The Suffragettes." All this well calculated to develop thought and study, and fluency and clearness of speech.

Class 4b. Composition satisfactory—bright children—originality encouraged.

Class 3. Composition very good, on imaginative lines; full descriptions.

#### *Reading.*

Silent reading fostered, in the "Students Class" as it is called, consisting of some 12 or 14 girls selected for their ability and trustworthiness, very considerable use is made of this "silent reading" practice. Many subjects thus treated, Geography, History, Arithmetic, &c.; keen competition among girls to get into this "sacred circle."

Class 2, silent reading to-day on Geography, Books, pictorial, explained first—keen answers by girls; points well put.

Class 4b. Reading; good—so clear—class full of life—keen, attentive.

#### *Dramatising Incidents in English History.*

A remarkably successful feature in this school. The girls themselves make up all the dialogue and remarks spontaneously—no learning by heart, from the Teacher, of the expressions they use. This makes very great demands upon the children it is true; but these girls come out of the ordeal most creditably—we were really surprised. The Headmistress does not approve of, or believe in, following set forms, they must make them up for themselves; she is right, of course. Class 1 (Students' class portion) dramatised one of Swinburne's poems entirely on their own, and provided everything, dress and properties, entirely by themselves; no help from Teacher. The acting was wonderfully good, the spirit of the legend in the poem had been so well apprehended. The Class 1 girls acted a scene in regard to the Rump Parliament in capital manner—invented their own remarks as the acting proceeded, and very sensibly too—the "hubbub" when Cromwell ordered his soldiers to turn out the Members was very real. Class 2 acted "The Field of the Cloth of Gold" in Henry VIII's time in realistic fashion—dressed up skilfully for the occasion, dresses all "throughout" by themselves too. Class 5 portrayed "St. Augustine's Coming," and "Canute and the Waves"—excellent. The story of "Hop-o'-my-Thumb" was acted by Class 6 (see Junior Section below).

#### *Drawing.*

"Black and White" work has been introduced since August into Classes 1, 2, 3 (top of school). I saw, in each of these classes, the attempts they did at their first lesson in the subject, and then (in cases of Classes 1 and 3) their efforts of last week. A pleasing advance noticed.

Class 3 object drawing (pencil) of Natural and Common objects quite good.

No Brush Drawing is taken at this School.

#### *Recitation.*

(4a). Nice enunciation and expression; rather too deep poem as to meaning—bright class; attention not quite so keen as others.

*Needlework.*

Girls seen at work this afternoon in *every* class. Class 1. Sound teaching—when a stitch or other operation has been taught on a “specimen” piece, then the knowledge is applied as soon as possible in the making up of a real garment, *e.g.*, tuck, gusset.

Class 2. Setting on buttons.

Class 3. Excellent teaching—most fruitful talk introductory to first lesson on patching in flannel—argument, patch v. darn, quite interesting.

Class 4. Herring-boning on canvas—the second lesson good.

*Junior Section.*

Developing wonderfully well; remarkable advance in one year. The teachers have approached their task not only with courage but *with intelligence*, and all along the line, in both classes of this Junior Section, marked success has come. The alertness of the children is delightful, and every lesson seems a great pleasure to them—as it was to us.

Stories. Class 6. “Hop-o-my-Thumb”—great life and excitement—much originality about the business—two of the girls are born comedians. And all of it admirably done in the face of great difficulties as to room and space (a miserable little class room).

Class 6. Picture Lesson—very good—girls apt in making complete statements.

Class 6. Observations Lesson—great keenness—much effort—largely observational—all seemed busy.

Class 6. Drawing. Mainly chalk on black millboards—a few had escaped erasion—process seen (very fair).

Class 5. Question Lessons quite a success. Story making (oral) by children remarkably good—never heard little girls speak out more courageously than here. Picture Lesson—but all the girls speak very well—full clear sentences. Drawing; chalk on brown paper promising well.

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MR. LL. S. LLOYD, H.M. Inspector of Secondary Schools  
in Cheshire.

*Important Note.*—It is to be understood that the opinions of the Board's officials, as here given, are their private views, and must not be taken to represent the opinion or the policy of the Board. Further, the time which has elapsed since the evidence was given causes some of the statements made to be out of date.

(Evidence given July 15th, 1909.)

THE EXTENT TO WHICH PRACTICAL WORK ENTERS INTO THE  
SECONDARY SCHOOL CURRICULUM.

Witness stated that Wood-work was taught in nearly all the boys' Secondary Schools in Cheshire, but there were one or two in which no Manual work at all was done. The Board had not pressed very strongly for the introduction of this subject in these cases. The schools in question were of the classical type and were not large enough to have “sides.”

Cardboard work was taken in two or three of the schools. It was introduced because there was no workshop and not because it was considered better than Wood-work. But it certainly had considerable value, and some of this sort of work

should be taken in connection with Geometry. Boys were keen upon it.

There was not a single Secondary School in the county in which Metal-work was taught.

The length of the course in Wood-work was usually about two years, occasionally three years.

At present not all the schools had good workshops, but they were included in all the new schools, and this difficulty was quite temporary, except for the one or two schools of classical type already mentioned.

#### THE TEACHING OF HAND-CRAFT.

From Cheshire Secondary Schools there was not much to be learnt. Perhaps the most interesting course of Manual work was in a second grade school in Chester, where it was taught by the second master, who also took Mathematics and worked the two subjects in relation to one another. The fact of the manual instructor being a member of the ordinary staff was of very great value in bringing the Manual Instruction into due relation with the other subjects. In the school referred to Physics, Geography, Manual work, and Mathematics were all related to one another. The headmaster, who was himself the teacher of Physics and Geography, was the moving force of the scheme. The old-fashioned type of Wood-work teacher was a man of very limited scope, and this tended to prevent that co-operative spirit in the staff which was the only way of securing real correlation between the Manual Instruction and the other subjects.

In the actual teaching of Wood-work there was nothing specially noteworthy in the county. Even in the school mentioned above little was done beyond the scope of the ordinary models. There were few instances in the county of the pupils making apparatus required for use in Physics. This was done, however, at the Secondary School in the Central Technical School at Birmingham, where the Manual work had a more serious function. This school was very largely fed by the Public Elementary Schools, in which the Manual work was well developed. Consequently the pupils when they came had already done one or two years of Manual work. For the first two years of the course the school was organised very much on the lines of the old Schools of Science, and in their first two years pupils spent one year at Wood-work and one at Metal-work. In the third and fourth years there was a division into two sides, which were called respectively "Engineers" and "Chemists." The "Chemists" continued Chemistry and Physics on the lines of the "School of Science." They took Wood-work in the third year, making the wooden parts required for physical apparatus, electric bells, &c. In the fourth year they took Brass-work instead, and so completed the physical apparatus begun the year before. Only about two hours a week were devoted to

Manual work, yet at the end of the course the pupils could all make simple pieces of apparatus in wood and metal. This was of special value because it gave a "real" knowledge of the construction of apparatus, the lack of which is such a difficulty in teaching advanced Practical Physics. It should be added that there was no attempt to make, in an unsystematic way, any kind of apparatus just as it might be most useful in the laboratory. That would probably be fatal.

On the "Engineers" side, Chemistry was dropped after the second year; and Steam, Applied Mechanics and Design were taken instead, with Experimental Mechanics in the mechanics' laboratory. In the fourth year, pupils returned to the Wood-work shop and did some pattern making. This gave the necessary note of reality to the drawing and design, which would otherwise have tended to be too academic.

While this Birmingham School was definitely a Secondary School in its aim, the quality of "purpose" providing its special feature, the suitability of the particular bias given to its curriculum depended largely on special local conditions. Still the general idea of the curriculum was capable of adaptation to other circumstances and in other places. In any attempt to give a special character to a second grade school, as contrasted with the pursuit of all-round mediocrity, Manual work on the lines of this example would always be of value.

#### THE IMPORTANCE OF MANUAL INSTRUCTION.

The witness considered that the scope there was for Manual work depended very much on the character of the school. Its usefulness was definitely related to the length of the school course. In some schools it occupied a definite place in the curriculum. For instance, in a Higher Elementary School, where the course was of only three years' duration, great weight should be laid on Manual work. But the same value did not attach to it in the case of schools of a definitely literary type. In such schools Manual work might be very usefully used for some of the more backward boys whom the ordinary curriculum did not stimulate. For these boys, for example, the Geometry might be developed less as ordinary Euclid and more as practical Plane and Solid Geometry, with application to machine construction, thus running hand in hand with Manual work. In another school the Mathematics for certain boys might consist largely of Mensuration applied to Land Surveying and Wood-work, and the boys could learn to make such things as five-barred gates, and receive instruction in forge work. Many dull boys, who quite possibly would turn out well later in life, particularly in outdoor work, *e.g.*, in the colonies, were no good at all in class, and clearly regarded themselves as hopeless. The kind of work described above might in many cases be just the thing to bring them out, whereas the work they were doing now was obviously useless.



The witness would hesitate very much to force a course of Manual work upon all first grade schools. There was undoubtedly some justification already for the contention that the curriculum was overcrowded. It was not that there were too many subjects, but that equal stress was laid on all of them.

As to whether the subject of Manual Instruction was not of sufficient importance to merit its inclusion in every school, witness was of opinion that it was desirable that the boys in every school should have the opportunity of taking a course in Wood-work; but he was not prepared to say that every pupil ought of necessity to have it. As regards the curriculum for the younger boys, however—that is, for those below 12—he considered that a place should certainly be found for Manual Instruction. In the case of boys over 12, it was not important to include Manual Instruction in the curriculum of those who were taking a classical course. But out-of-school work in this subject was of very great advantage, especially in the case of boarding schools. Since the curriculum was already too crowded, stress should only be laid at this age on the subjects that would be of most value to the pupils. The tendency at present was to emphasize an all-round mediocrity on matriculation lines, whereas it was important to find out each boy's particular *métier*. There should be really distinctive types of school; but this of course was only completely feasible in large towns. In a first grade school possibly the best arrangement was a bifurcation of the curriculum beyond a certain standard.

#### MANUAL INSTRUCTION AND EXAMINATIONS.

In the case of girls, examinations tended to prevent due attention being given to Needlework, since that subject did not help them in the examinations. But this difficulty did not arise in the case of Manual Instruction in boys' schools, or at any rate was less noticeable. In the case of schools preparing for teachers' examinations, it was perfectly true that in many cases the needs of the intending teachers were allowed to prevent girls taking a proper course of Domestic work. This was quite unjustifiable, because a teacher required Domestic Instruction as much as any other girls. It was quite different in the case of boys, because, except in special cases, there was no need to go on teaching them Wood-work for more than two years. In that time they should have had as much as they needed.

#### DOMESTIC INSTRUCTION FOR GIRLS.

Witness was of opinion that it was desirable that Domestic work should form part of the education of girls during the whole or the main part of the Secondary School course, with emphasis during the later years. He considered it quite a

mistake to defer this work until after the close of the ordinary course. Those who left school early were just the ones for whom an academic education was not of special value.

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Mrs. WITHEL, H.M. Inspector of Secondary Schools.

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*(Evidence given July 15th, 1909.)*

Witness explained that the subject of Handcraft in Girls' Secondary Schools almost invariably classified itself under two heads—Needlework on one side, and Housecraft (including Cookery, Household Management, &c.) on the other.

The schools themselves might also be classified roughly according to two types of course, one with the curriculum running up to 18 years of age, and the other with a curriculum ending at 16. In the former the school hours were so short, often comprising the morning only, that it was very difficult to manage the whole range of the curriculum so as to include Handcraft subjects. In these schools, which might be termed the High Schools, the amount of schooling per week was 18 or 20 hours, while in schools of the municipal type it was about 27 hours. It was by no means invariably the case that more homework was done in the schools that had the shorter hours. Many girls whose school hours were only about 20 per week did comparatively little homework beyond Music practice. On the other hand, the girls in the other type of school frequently had a large amount of homework, amounting to two or three hours per day, an amount which was both injurious and calculated to defeat its own end.

#### NEEDLEWORK.

(a) *The extent to which Needlework is taught.*

Almost every school made a pretence of doing some Needlework. In the High Schools sewing was taught in the lower part of the school, generally to girls from 8 till 12 or 13 years of age, and then very often it became entirely a voluntary subject and was continued as such until 14 or 15. Frequently it reached only a very inadequate development. But, on the other hand, some of these schools did quite good work in this subject though within a very narrow limit. In some few schools the teaching was so indifferent that possibly it would be better not to undertake the subject at all. In some places where the subject was not included in the regular curriculum, out of

school and holiday work was encouraged by means of examinations and inspection of work. Nevertheless a certain number of girls left the High Schools without that effective knowledge of Needlework that they ought to possess. The number, however, was undoubtedly diminishing.

As regards schools of the municipal type, where the bulk of the girls came to the Secondary School from the Elementary, remarkably good Needlework was often found. In fact, in such schools it was exceptional to find poor work in this subject.

(b) *The importance of Needlework.*

The fact that Needlework was in many schools not placed on the curriculum, created a false impression as to its importance. Perhaps it was not so important nowadays as it used to be before sewing machines were so largely used; but there was always work that could not be dealt with by the machine, and a woman lacking knowledge of Needlework was at a disadvantage.

(c) *The teaching of Needlework.*

It was rare now to find a school where Needlework was really badly taught, and in the best type of school it was recognised as an important subject and was growing in favour.

In the High Schools the subject was generally taught by the ordinary teachers. Very often the teachers in the lower half of the school had specialised in this subject, and frequently they were very efficient teachers.

Generally the instruction consisted of plain Needlework, capable of leading on to elementary Dressmaking; but in every school where the subject was well taught there was a certain amount of Art Needlework as well, and the work was generally the original work of the girls.

(d) *Needlework and Examinations.*

Needlework was a subject that did not count for anything in the certificates for which the greater bulk of the girls in Secondary Schools were studying. It had been pointed out that girls were placed at a disadvantage as compared with boys in being set to do Needlework while the boys were taking some subject that helped them in examinations. Undoubtedly the teaching of Needlework was prejudiced by this fact.

(e) *The age of commencing Needlework.*

Witness was of opinion that it was not advisable to teach definite Needlework below the age of about 8 years; but weaving and other operations, which were preparatory to Needlework, were suitable for young children. In the case of the normal child of

8 years of age, there was no harm in beginning to teach sewing.

#### DOMESTIC ECONOMY.

(a) *The extent to which Domestic Instruction is given in Secondary Schools.*

As a rule in schools where pupils normally stayed till 18, very little was done in the way of Cookery, Laundry, and Housework. Sometimes there was a sporadic course in Cookery ; in other cases there were post-school courses, and these were fairly successful in the very few cases in which they had been tried. The witness was acquainted with experiments now being tried in a few of the Boarding High Schools. In these schools some girls were really going on for University courses, while others were taking an alternative Domestic-Science course in the form parallel with the last form but one. To a large extent the classification of the girls was dependent on their ability, though it was not said to be so. The girls were required to take a certain amount of English and French, very little Arithmetic, Geography and History, while 15 hours a week was devoted to the Domestic side. The course was becoming extremely popular. It appealed to the parents of a certain type of girl, and the girls were not allowed to go into it until they had reached a fairly high stage of intellectual development in the school, the normal age of commencing being 16 or 17. So far there did not appear to have been any systematic development of this kind of scheme in the day schools ; but there were signs of a tendency in the same direction.

In the case of post-school courses, witness explained that grants were not paid by the Secondary branch of the Board, but might be claimed from the Technical branch.

In schools of the municipal type Domestic courses were much more commonly found, and it was in these schools that some of the best courses were being developed.

(b) *The teaching of Domestic subjects.*

The success of the Domestic courses varied very much in different schools, and the best type of teacher had not yet been secured. The teachers had good practical knowledge of the subject, but as a rule they had specialised too early on this particular branch and did not realise how the teaching of Housecraft should be correlated with the rest of the instruction. Wherever the subject was done well there was always a great amount of co-operation between the domestic instructress and the rest of the staff, and courses of work in the science laboratory were carried on in connection with practical work in kitchen and laundry. Bradford and Harrogate afforded the best examples known to witness, but at Bristol a scheme was being commenced on somewhat the same lines as at Bradford.

(c) *The place of Domestic Work in the Secondary School Curriculum.*

For the normal girl Domestic work came best as a post-school course. There were, however, some abnormal girls, and it would be advisable to give them their Domestic course at about 14 or 15. Such instruction formed an alternative method of opening up a child's development. Some girls, with apparently very little power intellectually, were capable of having their brains reached through their hands, and if a school could possibly afford (the expense being very heavy) to put that type of girl through a course of Handwork it would be of great advantage to her education. No doubt all girls would profit by this kind of work; but with only 18 or 20 hours a week the time could not be found for it in addition to the other work. It was necessary therefore to make a distinction between the two types of girl.

OTHER BRANCHES OF HANDCRAFT.

Witness knew of only two Secondary Schools where Gardening was taught to girls. One was a dual school, and the other a municipal school for girls, both in Hampshire.

Clay-modelling was frequently found in girls' schools, often in connection with Art or Nature study.

(ii) **Officials of Local Education Authorities.**

Miss C. R. GORDON, Organiser of Domestic Economy Classes under the London County Council.

(*Evidence given October 22nd, 1909.*)

[NOTE.—The witness desires it to be understood that the opinions expressed below are her own, and must not in any way be taken as representing the views of the London County Council.]

METHODS OF TEACHING DOMESTIC SUBJECTS.

With regard to the teaching of Domestic Subjects there seemed to the witness to be two distinct schools of thought—the old and the new—both of which were very actively defended just now. The new point of view (represented by Prof. Smithells) might be taken as that which held that all schemes for instruction in Cookery and Laundry-work must be built on a scientific basis. The old school of thought believed that schemes should be built on the foundation of typical processes, a dish or an article in common use being chosen which would provide an interesting motive for work, and which would represent others made on the same lines, the principles under-

lying the practical work being dealt with as they came along easily and naturally, and, if possible, connected with the Science lessons and experiments. The dish or article chosen should be interesting and must be typical, and suited for its place in the syllabus, so that at each point the various processes and underlying principles might be dealt with so far as advisable. In the newer system the starting point was the scientific basis, and the typical dish was used only if it fitted in with the Science syllabus.

The method of making Cookery the main factor and introducing the scientific principles in their natural place did not produce such good chemists but turned out better practical cooks. At the same time, the Science lessons increased the interest in the Cookery instruction very considerably, and the Cookery lessons made the Science lessons more real to the girls.

A great deal depended, of course, on how the treatment of typical processes was made to lead up to scientific inquiry. There had been a good deal of interesting experiment in the way of correlating Science with Cookery in Secondary Schools in London. No two schools were doing quite the same thing. There was certainly a danger of giving too great prominence to the Science work in this connection. Directly a syllabus strong on the Science side was built up, the Cookery as such had to give precedence to it and was used mainly to illustrate the Science teaching; the Cookery from the practical standpoint suffered. On the other hand, in Cookery lessons unaided by Science, students were at once confronted by many difficulties, which could not be dealt with intelligently.

It might be urged that while on educational grounds the old method of going from the handling of the common object to the more remote reasons for its condition—proceeding from the handwork to the scientific principles underlying it—was correct, yet in dealing with more advanced students it might be quite right to start from the scientific side. Possibly it was true that both methods were sound if kept to their proper place. Nevertheless, it was the fact that persons trained chiefly on the scientific plan did not later become easy practical workers; they did not do Handwork naturally. Provided the person trained on scientific lines afterwards took a thoroughly practical course of work, there would be nothing to be said against the system. But under present conditions this did not often happen.

The person with scientific tendencies did not always take kindly to Handwork.

With regard to the suggestion that persons taught on the "scientific basis" plan would have the power of following up and adding to their knowledge, while those who had simply learnt manipulative skill would have no principles on which to extend their study, the witness considered that this was estimating the intelligence of persons teaching practical work at a very low standard, surely there was no need to go to extremes.

There was no reason why a teacher trained on the "Handwork basis" should not be an intelligent and capable woman, with a good knowledge of principles. Moreover, persons working as scientists would live to be very old before they became practical cooks.

The witness had no desire at all to pour scorn on the "scientific basis" plan. She considered it most important that the correlation between Cookery and Science should be real and true. Possibly the two subjects could be taught by the same person; otherwise the two teachers should work together in friendly co-operation, and, for several reasons, that was the better way. It was desirable that the teacher of Cookery should be trained in Science; but, above all, she should be a thoroughly good cook, and a well-educated woman.

#### DOMESTIC TEACHING IN SECONDARY SCHOOLS IN LONDON.

In the London Secondary Schools very little Cookery was being done at present. The Council Schools in some cases were doing a little. Needlework was done to a much larger extent, and was now rapidly being placed on a very satisfactory footing, although it was exceedingly difficult to give enough time to the subject.

#### SUGGESTIONS FOR A SCHEME OF DOMESTIC INSTRUCTION IN SECONDARY SCHOOLS.

Needlework was really more important than Cookery in Secondary Schools if there was any chance of an after-school course in Cookery. A very good plan would be to have a course of Needlework right through the school, correlated with other subjects, Geometry, Art, and Arithmetic, and then to have an after-school course or a course at the top of the school for Cookery. Personally, however, the witness would prefer to have a two years' course of practical Cookery about the middle of the school, giving one afternoon a week to it. Although treated as Handwork, it should be correlated with Science, and close co-operation should exist between the Science and the Cookery teacher, if the two subjects were not taken by one teacher.

This two years' course should be restricted to Cookery; no cleaning should be taught beyond the cleaning of utensils, &c. Housework and home organisation (two very different things) should be postponed either till the last year or till quite the end of the ordinary school course, except in special cases, or where the curriculum is organised for the purpose.

In Needlework it was desirable to teach the girls to plan and construct whatever article they might be making. Therefore they should make working drawings and paper patterns. The syllabus should be so arranged as to bring in all the different processes and stitches, and to give information by the way about

materials and tools. Girls should be taught to choose the material most suitable for the work in hand, and the article made should be so chosen by the teacher as to give the required kind of experience of material and working. The correlation of Needlework with Art was very important. A great deal could be done, and in London was done, in this way, as, for instance, by allowing girls in their Art lessons to make designs for decorating the article constructed in the Needlework lesson.

This course of Needlework would extend over six or eight years, occupying  $1\frac{1}{2}$  or 2 hours a week. Less than  $1\frac{1}{2}$  hours would not be much good, while 3 hours would be out of proportion, as a rule. At the end of the course the pupils might be expected to have a good working knowledge of the subject, including the use of different kinds of patterns, and their adaptation to special requirements.

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Mr. J. H. HALLAM, B.A., M.Sc., Chief Assistant to the Inspector in charge of Higher Education in the West Riding of Yorkshire.

(*Evidence given September 30th, 1909.*)

Witness stated that before going to the West Riding he had had experience in teaching boys and girls in English and Welsh Secondary Schools, also in teaching Evening Classes. He was appointed under the West Riding County Council as Organising Master for Science Subjects and Mathematics, and since 1906 had been Chief Assistant to the Inspector for Higher Education.

#### THE PRACTICAL WORK DONE IN SECONDARY SCHOOLS.

Practical work in the Secondary Schools varied from school to school, but in all of them might be divided into three stages:—Preliminary, General, and Special.

##### (a) *Preliminary Stage.*

This consisted mainly of Nature Study, done in nearly all the Secondary Schools up to the age of 11 or 12. It was a pity that the subject was almost always entirely confined to work with plants, since young children were more readily interested in animals, as having more likeness to themselves. The teaching was often very good; the chief danger was a temptation to go beyond suitable limits and attempt to give formal teaching involving the use of words the children could not understand.

In many cases children coming to the Secondary Schools from Elementary Schools had had some instruction in Elementary Science, but as a rule this had been too disconnected to be



of any great value. With a more carefully arranged sequence it would, no doubt, be useful as an introduction to the work in the Secondary School.

Very little special equipment was needed for the preliminary stage; when a laboratory was not available the Nature Study could be done in an ordinary classroom.

#### (b) *General Stage.*

The general stage, commencing at about 12 and going on till 14, consisted of Elementary Science, comprising Physics and Chemistry. In a few schools the two subjects were still taught separately, though this was not necessary or desirable. Equal amounts of the two subjects were not required at all stages in the work, and the distinction between them was without significance. In a very few schools Elementary Physics and Chemistry were taught by different members of the staff, a bad arrangement, leading to overlapping and perhaps confusion of thought in the pupils. Probably the best method was to plan the course without making any division at all, selecting such matter from "Chemistry" and "Physics" as would give the greatest possible opportunity for observation and reasoning. The result would be a course containing rather more Physics than Chemistry, but without formal division between the two.

In dual schools it was a question whether boys and girls were best taught together in Practical Science. As a rule girls did not show quite so quick an appreciation of this subject as boys, and if each step was to be thoroughly understood they could not go at quite the same rate. A girl was often less apt than a boy to take a questioning attitude towards her results, and it was not uncommon to find girls doing advanced practical work in Science with great neatness but only the dimmest idea of applying any reasoning to it.

Another reason for taking girls separately in Science was that the knowledge acquired by girls was to be used largely for a different purpose. Subsequently the girls took up Housecraft subjects: Cookery and Laundry-work; and if these were to be thoroughly understood and intelligently done as much appeal as possible must be made in the preceding Elementary Science to domestic illustration, and the course must be framed in some degree with an eye to its application to the Domestic Subjects to follow.

#### (c) *Special Stage.*

In Secondary Schools boys often did rather highly specialised work in Science; they sometimes covered almost as much ground in a particular subject as afterwards at the University. It was a matter for doubt whether it was profitable to carry Physics and Chemistry to the degree of specialisation reached in some Secondary Schools. The elementary stages of Science

were the most valuable from the school point of view; the "advanced" work was largely only the accumulation of more facts, which afterwards would be in some cases dealt with over again at the University, though with a wider outlook.

It was extremely doubtful also whether schools should confine themselves to two Science subjects and specialise in these. The origin of this specialised work might be traced to the University Entrance Scholarship Examinations in the case of the older Secondary Schools, and the newer schools at present tended to follow the older, although very few of their boys went on to a University. Even if such were the case, it would seem that the University teacher did not as a rule prefer the student who had done much specialised work in his subject at school. Some of the over-specialisation in Science might also be traced to the encouragement formerly given by South Kensington grants. The witness was of opinion that Secondary School work in Science might, with advantage, be broadened in the higher stages to include some Elementary Biology and Geology, for example. He did not think this would mean taking too many subjects at once and a loss of thoroughness; not, at any rate, of the sort of thoroughness desirable in school work; time could be gained by removing some of the unnecessary barriers between subjects and the consequent overlapping.

It was desirable to correlate the Manual Instruction (taken from, say, 12 to 14) with the Mathematics and Science, and it was a good thing to make some of the Science apparatus in the Handwork Course, if this was not allowed to interfere with the proper sequence of the Handwork.

With girls the special stage in Science in most of the Secondary Schools followed upon much the same lines as that for boys, though for no particular reason, and in the great majority of Girls' Secondary Schools there was an extraordinary lack of correlation of the Science work with the Housecraft, which should be the application of it. In some cases the Science mistress never came into contact with the Domestic Subjects mistress, the latter being a visiting teacher. Also the Housecraft was rather looked upon as a subject of minor importance, outside the main curriculum. The same thing occurred often with Manual Instruction in the case of boys.

The chief objection urged against a thorough correlation of Science and Housecraft in the Girls' Secondary School was that some girls take external examinations in fairly advanced Science, and a course of Science framed so as to form a basis for Housecraft is not the kind of preparation required for such a test. On the other hand, among those favourable to a reform of this kind in the Science work done by girls there was a tendency to ask for a special examination syllabus on the new lines, the effect of which would be to hinder free development of the idea.

## TEACHERS OF SCIENCE AND HANDWORK.

It was unfortunate that in Secondary Schools a member of the staff, frequently without training in Secondary School teaching methods, was the Science teacher; this, however, would be remedied in time. The Science Course at a University was generally expensive, and the chance of an extra year for a training course was therefore less.

The tendency to regard Handwork as an inferior subject might be corrected if it could be taught by a member of the ordinary staff who also taught the elementary stages of the subjects best correlated with it, Mathematics, for example. At present Manual Instruction was often given by a visiting master who was not aware of the work the boys were doing in other subjects, and who, even if he were, was not perhaps qualified to appeal to it.

The same kind of difficulty existed in many Girls' Schools, and even where the Domestic Subjects were taught on scientific lines there was apt to be overlapping and some confusion owing to the Domestic Subjects teacher going over in rather a different fashion some of the ground already covered, or afterwards to be covered, by the Science mistress. The ideal plan would undoubtedly be to have the same teacher in charge of both the Science and the Housecraft; the difficulties in the way of this were (1) the lack of suitably qualified teachers, and (2) the length and expense, at present, of a course of training in both Science and Housecraft. Difficulties of organisation would no doubt arise, but they were not insuperable, except in a dual school where the only Science teacher was a master.

In the West Riding steps had already been taken to deal with the difficulty. Professor Smithells was asked to give an address on the subject to governors and mistresses and masters of Secondary Schools attended by girls. In a discussion which followed the address the masters on the whole welcomed the proposal to introduce more of the domestic idea into Science work for girls, while the mistresses received it with some caution. At the conclusion of the meeting, Science mistresses were urged to acquaint themselves with what was taught in Housecraft and if possible to train themselves to teach it. A course for Secondary Teachers on the correlation of Science with Housecraft had since been organised by the West Riding Education Committee, and had been attended by some 30 teachers, Science mistresses and masters.

A mistress able to teach both Science and Domestic Subjects would be particularly valuable on the staff of a small Secondary School. At present in such a school the Science mistress generally spent four or five hours a week teaching scraps of literary subjects for which she had no special qualifications, whereas if she took the Domestic Subjects in that time they could be brought into touch with the other work and the expense of a visiting teacher saved.

In order to meet the difficulty from the other side and put the teaching of Housecraft on more scientific lines, the West Riding Education Committee had also organised a Vacation Course of lectures and practical work for Housecraft teachers on the scientific principles underlying Domestic work. Certainly, however, the more logical course was to give the Science teacher a training in Domestic Subjects.

#### EXTERNAL EXAMINATIONS IN SCIENCE.

Some of the external examinations taken by Secondary Schools had not encouraged the teaching of Science on sound lines. In the Preliminary "Local" Examinations, for example, the Science was judged purely on written work, yet the only test of any possible value at such a stage was a practical test. This grade of examination had now ceased to be taken in West Riding Secondary Schools, but the Junior "Locals" harassed the Science teacher who wished to make his work a training in intelligence rather than the covering of a syllabus. External examinations led also to the use of textbooks written specially for them, and a textbook defeated the object of good Elementary Science teaching by continually anticipating a result which the pupil should discover for himself.

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#### ADDENDUM.

The following written notes were supplied by Mr. Hallam in addition to his verbal evidence:—

##### I.—INFLUENCE OF THE WEST RIDING EDUCATION AUTHORITY ON THE TEACHING IN SECONDARY SCHOOLS.

The Local Education Authority in the West Riding is able to influence directly the teaching of practical and other subjects in Secondary Schools by means of—

- (a) The grants which they give towards buildings and apparatus subject to their approval of the plans and particulars of equipment;
- (b) Specially qualified peripatetic teachers allocated to schools where help in organising and teaching a particular subject is needed; and
- (c) Grants-in-aid given to teachers to enable them to attend special courses organised by the Committee dealing with methods of teaching.

##### II.—RECENT EQUIPMENT FOR PRACTICAL WORK IN WEST RIDING SECONDARY SCHOOLS.

By means of the building grants the kind of accommodation for practical work thought necessary by the Authority has been secured in the new school buildings, and this accommodation has been placed in the most convenient manner. In this way it has been possible to approach in some degree the ideal arrangement for practical work, viz., that the room should be adapted to the fittings required, not *vice versa*, as is very often the case.

Generally speaking, the Boys' Schools always include Chemical and Physical Laboratories, and a Manual Instruction Room; the Girls' Schools a joint Laboratory for Chemistry and Physics, and rooms for Cookery and Laundry Work. The dual schools combine this accommodation in a suitable manner. In the smaller schools a joint laboratory for Chemistry and Physics is the rule, occasionally fitted so that it can be used for Botany also. Various other devices have been employed to save expense, *e.g.*, in one case a room has been fitted to be used for both Manual Instruction and Domestic Subjects. The larger schools have in some cases special rooms for Nature Study and for the more elementary Physics and Chemistry.

It is pleasant to be able to say that the Governors and Staffs of the schools have invariably shown themselves most willing to receive advice and help from the Local Authority, so much so that in nearly all cases the plans and specifications for the equipment have been drawn up at Wakefield. We have not attempted to stereotype these in any way; indeed, I think it is to be regretted that teachers do not more frequently possess opinions on these matters: there is too great a readiness to leave all details in the hands of laboratory furnishers, who are unable to look at things from a teacher's point of view and are not likely to make improvements from educational motives.

Without going into details it may be said that the main object has been to get fittings of thoroughly good material and, above all, simple and strong in make. Everything not required in the Science work of a Secondary School has been dispensed with, and the furniture is as like ordinary furniture as possible. In some cases the circumstance that the school is to serve also as the local Technical School makes additional accommodation necessary, some of which is also used by the Secondary School pupils: special rooms for Dressmaking, or Mechanical Drawing, for example.

Apart from the obvious general advisability of making school equipment as simple as possible, there is the special consideration that many of the pupils in our Secondary Schools will afterwards become Elementary Teachers, and will find themselves obliged to give Science lessons with little or no special apparatus. If they have been used in the Secondary School to an elaborately fitted room they are likely to find themselves at a loss in the new circumstances. In this connection the fact that a number of our new Secondary Schools have for the past few years been working in inconvenient temporary premises may not be altogether to the bad in its effect on intending Elementary Teachers.

Again, to the young Secondary Science Teacher, fresh from the highly equipped laboratories of a University, it is a useful safeguard to find himself for a time with only the simplest appliances for teaching. He is compelled to resource, and is less likely to offer merely a diluted version of his University Science. In this I speak from personal experience.

The tendency to make school equipment for practical work simpler than it has been is now quite general. Like the matter taught, it was originally copied from what is found in Universities; as the question is more and more looked at and tested from the school point of view, we shall, no doubt, have greater simplicity and less specialisation. There is still much room for change in this direction.

### III.—CORRELATION OF MANUAL TRAINING WITH OTHER SUBJECTS.

I cannot claim any special knowledge of the teaching of Manual Work, but, viewed from the outside, its present chief drawback seems to be a want of correlation with other subjects. This is probably because it is always taught by a Visiting Master, generally a local carpenter. He is not often, on general grounds, a suitable teacher, and opportunities of linking up the subject with Elementary Mathematics, particularly Arithmetic and Geometry, are missed. No doubt there are practical difficulties in the way of a member of the ordinary staff teaching the Wood-work, but I am by no means convinced that they are insuperable. This plan is now being followed in one

West Riding Secondary School, and it is hoped that the arrangement will be found possible in other cases.

Although there may be incidental correlation of Manual Work with Elementary Mathematics and other subjects, it must be recognised that any continuous scheme of correlation is difficult. In Elementary Mathematics, for example, collective teaching is generally possible, the various members of the class are much at the same point in the work at the same time: in Manual Instruction, however, this is not so, the boys work at different rates, and it is part of the value of the subject that full scope for individual progress is given.

The suggestion is sometimes made that a sort of correlation might be gained by making the simpler physical apparatus in the Manual Instruction lessons. This is possible to some extent, though the number of articles which can conveniently be furnished in this way is not very large; much scientific apparatus is of glass. If the Manual Instruction includes Metal-Work the number may, of course, be extended. Also, an attempt to secure correlation of this kind at all costs leads to disturbance of the Manual Instruction Course and a diminution in its educative value. If the articles to be made do not provide a sufficiently progressive course there is apt to be dull repetition. Again, a piece of apparatus most conveniently *made* in the early stages of Wood-work may possibly not be *used* in the corresponding stage in Practical Science.

I think it doubtful whether it would be advisable to introduce further special instruction in Handicraft into Boys' Secondary Schools, as local circumstances and requirements may indicate. Further training of this kind would be more safely sought by developing the practical side of subjects, such as Geography, which are now taught too academically. There would be less danger of allowing the Secondary Course to drift too far towards that of a Technical School, with no great gain to the pupils in their after school work. The Manual Instruction Room should, however, be open for use at most times, and the boys should be expected and encouraged to make models illustrating their work in other subjects.

#### IV.—NEED FOR DOMESTIC SUBJECTS IN GIRLS' SECONDARY SCHOOLS.

It would be difficult to emphasise too much the need in our new Secondary Schools for a more central position in the curriculum for Domestic subjects and for the greater infusion of the Domestic idea into their work generally. In their present early days they are to a large extent filled with pupils who are going to be Elementary or Secondary teachers, and if it comes to be widely thought that a Secondary School has little or nothing to offer to girls destined for domestic life, a great loss to the community will ensue. The primary difficulty is to get the mistresses (who seldom have strong domestic interests) to see this. One looks forward with very great interest to the time when King's College will turn out students who have been through a course of Household Economics. Some of them should make excellent Science mistresses of a new type.

I do not think that there is much danger of giving the work of a Girls' Secondary School too utilitarian a bias by enlarging the importance of Domestic subjects, for they have a remarkably wide scope, and if properly handled may be made to further many of the aims of education as regards mind and character.

Specialised teaching of Science to girls might well be replaced by instruction in Housecraft, preceded by Elementary Science shaped to form a basis for the Housecraft. The merging of the Science proper into the Housecraft would take place almost unconsciously. Certain lessons would be found to be given more conveniently in the cookery or laundry room than in the laboratory, and this occurrence would become more frequent as the course went on. If the two subjects cannot be taken by the same teacher, then the closest possible correlation should be secured by co-operation, and this can only be done if the two teachers are able to meet on common ground as educators.

Miss WILENA HITCHING, Organising Inspector of Home Management under the Derbyshire Education Authority.

(Evidence given November 15th, 1911.)

In reply to questions, witness stated that she was at present Organising Inspector of Home Management and Needlework for the whole of Derbyshire. Her experience, so far, had been confined to Elementary Schools, but if the subject of Home Management were taken up in the Secondary Schools of the county, she would then, no doubt, be required to visit those schools. Prior to appointment to her present post, she was Head Mistress of a Senior Girls' School under the Leeds Authority—the Meanwood Road Girls' School. She had also given demonstrations and lectures on Home Management to students of Tottenham Training College, the Leeds Training College, and of the University of Leeds, and to teachers in Leeds, Halifax, Manchester, and Preston, and had also published a book on the subject.

#### HOME MANAGEMENT.

The witness explained that the term "Home Management" had been adopted in Leeds and also by the Derby County Education Authority as covering the whole of that type of Domestic Economy or Housecraft which was taught in the Elementary Schools of those areas. The witness laid considerable stress on the selection of a suitable title for this kind of work; the word "craft" was misleading, and "economy" too difficult for children. The term Home Management seemed appropriate, and certainly appealed to the girls' minds.

#### THE VALUE OF HOME MANAGEMENT.

The witness believed that the general introduction of courses of Home Management in both Elementary and Secondary Schools would have an enormous influence for good—would, in fact, revolutionise the country. It would reduce "snobbishness," and wipe out the widespread idea that housework was menial. By judiciously spreading the instruction over the whole period of school life, *practical* lessons in Hygiene were likely to make healthy *habits of living* which would last beyond the period of the children's schooling, to the immense advantage of the scholar, the home, and the community at large. In the case of the older girls, instruction in Infant Management was vitally necessary, for comparatively few girls had the opportunity at home of gaining experience in the care of babies. Given in an intensely serious way by a tactful and sympathetic teacher, such

lessons were greatly enjoyed, and were productive of nothing but good. Generally, lessons in Home Management were a welcome and beneficial change from the other school subjects; they formed a link between the school and the home, between the teacher and the parent, and, more important still, between the teacher and her pupil: they gave from the first a homely, happy, healthy tone to a school; they led the children—without “putting old heads on young shoulders”—to realise the great importance of woman’s work in the world. The so-called “dull” girls were transformed by this teaching; they lost their apathetic listlessness, they learnt that examination results were not the “be-all and end-all” of existence, and that the world needed clever hands as well as clever brains.

#### HOME TEACHING FOR BOYS.

The work was going to be developed for boys as well as for girls, and the witness believed it would be of great advantage to them to have some simple practical training of this sort, including Cooking—just the kind of thing that would be useful to them as Boy Scouts, Territorials, or emigrants. Many Masters had themselves asked if they might take the subject, and experience of Mixed Schools showed that the boys would enjoy it. It would not in the case of boys be called “Home Management,” but “Lessons on Personal Hygiene” and “Lessons on Helpfulness in the Home.”

A series of suggested lessons for boys is printed in Addendum B. to this summary.

#### HOME MANAGEMENT IN THE ELEMENTARY SCHOOLS.

The work was carried right through the School from Standard I. to the top. It was desirable to introduce the subject as early as possible so that the children had a longer time to get into habits of healthy living. The early lessons in the lower Standards were very simple and merely followed the common lines of health and so reached the homes. Some of the Mistresses wished to start it in the Infants’ Schools; but this was not encouraged except to the extent of teaching the little ones to wash their hands, use their handkerchiefs, &c. The three years’ course suggested in the syllabus was intended to begin at about the Fourth Standard (*i.e.*, at 11 years of age), and occupied  $1\frac{1}{2}$  hours a week during the three years. It did not profess to give elaborate technical instruction in such subjects as Cookery or Laundry-work; but it did provide a sound foundation for such instruction, and if there were no opportunity for the more advanced teaching, the girls would still be well prepared for their daily life. Of course, the Home Management lessons were much less expensive than the ordinary



Cookery and Laundry instruction, and could be taken up where the more technical work was out of the question. They required no costly buildings or equipment, but were taken in the ordinary classrooms, and the children were encouraged to provide their own apparatus. This use of their own things, brought from home, such as irons in the Laundry lessons, greatly added to the interest the pupils took in the lessons.

The girls could not leave School before 13, so the three years' course was started at 11 to ensure that they all went right through it. In her experience of all types of Elementary Schools, the witness had never seen any reason to draw back from her conviction that infant management could be appropriately and usefully taught to girls of 12 years of age.

Some of the pupils went also to Cookery and Laundry Centres; but there was not accommodation for them all to do so. Were it otherwise, witness would be in favour of them all going, because she held that girls could not get too much of this work. Besides being valuable for its own sake, it helped the other subjects. Even Schools which had regular courses of Cookery and Laundry-work might, with advantage, take this Home Management, which formed a useful basis for the other.

The witness was convinced that the Home Management work need not interfere with the other work of the School. In her Leeds School she had a course of Home Management, and also let all who could go to the Cookery and Laundry Centre. Those who went to the Centres commenced Cookery at 11. Consequently, these girls, in addition to their  $1\frac{1}{2}$  hours of Home Management, had  $2\frac{1}{2}$  hours a week, for 16 weeks in the year, at the Centre. Even this amount of time did not hinder, but rather helped, the rest of the School work. There was time in the curriculum for this subject without omitting any of those usually regarded as necessary; indeed, the witness included a lesson in Literature for all classes weekly. Home Management had in some Schools taken the place of Elementary Science, and the witness did not object to this, provided it was not called Domestic Science. In the curriculum of her School\* at Leeds, however, she had found it quite possible to retain Elementary Science in the form of Nature Study taught practically, in addition to the Home Management. Much could be done in the direction of economising time on other subjects by better methods of teaching. For instance, it should not be necessary to give, even to the elder girls, more than  $2\frac{1}{4}$  hours a week to Needlework. Or, again, time could often be found by omitting one of the lessons in Arithmetic without doing any harm.

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\* A copy of the curriculum of the witness's School at Leeds is printed in Addendum C. to this summary. (See p. 196.)

## HOME MANAGEMENT IN SECONDARY SCHOOLS.

The witness was strongly of opinion that Personal Hygiene and Home Management should form part of the education of girls in Secondary Schools during the whole of their School lives, in order that every girl might receive the necessary training in the proper management of a home and an infant—training just as important for the Secondary as for the Elementary School girl. The subject should be included in the ordinary curriculum rather than in special courses, so that the girls might realise that it was not an isolated subject, but a very necessary and valuable part of their training for after-life.

The three years' course suggested by the witness was planned with a view to the Elementary Schools; but, although she had had but little direct experience of Secondary Schools, she was certain that the work would apply equally well to them, because it dealt merely with the ordinary management of homes.

Home Management was already taken to some extent in the Derbyshire Secondary Schools, and it was hoped that it would grow in these Schools. At present children passing on to Secondary Schools left the Elementary Schools as a rule at about 11; consequently they missed the Home Management course, and only had the lessons in Personal Hygiene which preceded it. It was most important that similar work should be introduced into the Secondary Schools, and it would be a great advantage to use the same syllabuses in both types of School; so that if a girl left the Elementary School in the middle of the course, she could go straight on in the Secondary School.

In Secondary Schools the course need not necessarily be taken at the same ages. The need for taking it early in the Elementary Schools was that many pupils left at 13; but in Secondary Schools, where they *all* stayed till 15, it might be postponed till the years 13–15.

## TEACHERS OF HOME MANAGEMENT.

The witness's ideal of a Teacher of Home Management was a thoroughly domesticated, tactful, and sympathetic woman—a womanly Teacher. There were many such in the Schools, and the witness had never found a Teacher who could not learn to teach this subject. If she did find an unsympathetic Teacher, she should give her this subject to teach: it would make her sympathetic. The work did not require the scientific training so long thought essential; it did need a love of the subject and a knowledge of how to manage a home. It was not only unnecessary but positively undesirable to bring the

scientific aspect of the work too prominently before the children; indeed, the more the Science part was kept in the background the better.

Naturally, the Teachers required a certain amount of special training for the work. But the ordinary teachers could learn to do it, and it was surprising how quickly they picked it up. The method adopted in order to get the Teachers to take the subject up was to give lectures in each district, and to follow these up by visits to, and by giving demonstration lessons in, the Schools—the intention of the lectures being not so much to instruct the Teachers as to inspire them with a love of the work and so to lead them to make a study of it themselves. The result had been that the work had received the warm approval of the Teachers.

The witness considered it very important that Home Management should be taught by permanent members of the Staff of the School. This was not impossible, even in the smallest Schools, for she had been in Schools with only one Teacher which were yet able to take this subject to a limited extent. The Visiting Teacher must be avoided; she might have more technical knowledge than others, but that was rather a disadvantage than otherwise to the girls; besides, their own Teachers' influence was so paramount. Even in a small Secondary School, therefore, it should be a *sine qua non* that the subject should be taught by full-time members of the Staff. Any woman Teacher could take it up, and many men saw the importance of it, and desired to give such lessons as were suitable to their boys. (See Addendum B.)

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## ADDENDA TO MISS HITCHING'S EVIDENCE.

### *Addendum A.*

#### *Syllabus of Three Years' Course of Home Management.*

##### OUTLINE OF FIRST YEAR'S COURSE.

INTRODUCTION—HOME MANAGEMENT AN IMPORTANT AND NOBLE WORK.

THE KIND OF GIRL WHO IS LIKELY TO BECOME A GOOD HOME MANAGER.

A Girl who attends to the Perfect Cleanliness of her Body, her Hair, Nails and Teeth.

A Girl whose Clothing (including her Boots) is always Clean, Tidy, and Neat.

A Girl who has Good Manners in the Home and in the Street.

A Girl who is Healthy because she gets plenty of Fresh Air and Sunshine, Exercise, Good Wholesome Food, Sleep, and Lives in a Clean Home.

## SIMPLE PRACTICAL LESSONS ON THE MANAGEMENT OF THE HOME.

Need for Method and Forethought.

A Day's Housework.

Details of Daily Housework:—Lighting the Fire; Making-up the Fire for the Afternoon; How to Sweep a Room, Dust a Room, Clean a Doorstep, "Wash-up," Clean a Saucepan, Clean a Sink, Make a Bed, Lay a Dinner-Table.

Manners of Children at Table.

A Week's Housework:—General Hints; Work on Monday, including Cleaning of Sitting-Room and Grate, and Care of Plants; Work on Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday; How to make Sunday a Happy Day for Children.

Fortnightly Cleaning—Bedroom Windows; Shaking Carpets; Occasional Scrubbing of Bedroom Floors; Cleaning of Forks, Spoons, Cruets, &c.

## SIMPLE PRACTICAL LESSONS ON FOOD.

Need for Food.

Breakfasts for Working-People and their Children (other than Infants)—Oatmeal Porridge; Bread-and-Milk; Boiling an Egg; Frying Bacon and Egg; Making a Cup of Cocoa; Making a Cup of Coffee.

Dinners for Working-People and their Children (other than Infants).

The Evils of "Tea-Dinners."

The Great Advantage of Soup—Bone Stock, Pea Soup, Haricot Soup, Lentil Soup.

Meat for the Working-Man and his Family—The Sunday Joint; Cooking a Chop and a Steak.

Vegetables for the Working-Man and his Family—Actual Boiling of Potatoes.

Puddings for the Working-Man and his Family—Macaroni-Pudding, Rice-Pudding.

"Teas" for Working-People and their Children.

No Tea for Children under Seven—Milk or Cocoa instead.

Actual Making and Serving of Tea.

Preparing a Plate of Bread-and-Butter.

Watercress, &c.

Suppers for Working-People and their Children.

For the Children.

For Adults.

SIMPLE LESSONS ON WASHING—Need for Frequent Washing of Clothing; Preparation for Washing-Day; Utensils Needed, and their Use; The Washing Itself; Drying, Folding, Mangling, and Ironing; How to Avoid the Usual Discomforts of Washing-Day; The Washing of Woollens; The Washing and Ironing of a Print Pinafore; The Washing and Ironing of White Clothes.

## VERY SIMPLE LESSONS ON CLOTHING.

Its Uses.

Underclothing.

Dangers of Flannelette.

How to Deal with a Child on Fire—Importance of Fireguards—The recent Children Bill relative to the same.

## OUTLINE OF SECOND YEAR'S COURSE.

## INTRODUCTION.

LESSONS ON THE HOME—ITS CHOICE AND FURNISHING—Points to be borne in mind in Choosing a House; Choice of Wall-Papers; Choice of Floor-Coverings; Choice of Curtains; Choice of Pictures; General Hints on the Buying of Furniture—Evils of the Hire System; Furnishing Living-Rooms; Furnishing Best Sitting-Room; Furnishing Bedrooms; Furnishing Bathroom; Furnishing Kitchen or Scullery; Furnishing Entrance or Passage.

**REFINEMENTS OF HOME AS SHOWN IN**—The Living or Sitting Room; The Bedrooms; The General Behaviour of the Inmates.

**MARKETING FOR THE HOME, AND THRIFT**—Need for Keeping Accounts; Need for Providing for a "Rainy Day"; Marketing; Drapery Sales.

**ECONOMIES IN THE HOME**—Economies in Household Supplies; Economies in Food; Economies in Clothing, &c.

**A WEEK'S DINNERS FOR THE WORKING-MAN'S HOME WITH RECIPES FOR COOKING THE SAME.**

**GENERAL HINTS ON SPRING-CLEANING.**

**FURTHER LESSONS ON WASHING**—The Washing and Ironing of a White or Cream Silk Blouse; The Washing, Starching, and Ironing of a Coloured Muslin Blouse; The Washing, Starching, Retinting, and Ironing of Lace; The Starching and Ironing of Collars and Cuffs; The Washing, Cleaning, and Retrimming of a dirty White Sailor Hat.

**FURTHER LESSONS ON CLOTHING**—The Economical Buying of Clothing for Girls; The Economical Buying of Clothing for Boys; Desirable Outfit for Girl of Thirteen to Fourteen Years of Age; Care of Clothing—Renovations, Removal of Stains, &c.

**TREATMENT OF SIMPLE COMMON AILMENTS**—Headache; Toothache, Ear-ache; Colds, Coughs, Sore Throats; Cuts and Bruises; Burns and Scalds; Chilblains and Chapped Hands; Ringworm; Fainting; Warts; Corns; Sore Eyes; Sore Heads.

#### OUTLINE OF THIRD YEAR'S COURSE.

**SIMPLE LESSONS ON THE MANAGEMENT OF INFANTS.**

**Their Food**—Importance of Mother's Milk; Comparison between that and Cow's Milk; Choice and Care of Bottles; Care of Milk; How to Mix the Food—Evils of Patent Foods; Need for Regular Intervals between Food—Quantity of Food, &c.; How to Give the Food.

**Their Clothing**—Baby's Layette.

**How to Wash an Infant.**

**The Baby's Cry**—Evils of Soothing Mixtures and "Dummy Comforters"—Training of an Infant in Matters of Cleanliness.

**The Baby's Sleep**—How the Poorest People may Improvise a Separate Cot.

**The Baby's Airing**—The Extreme Unsuitability of the Modern "Go-Cart." Special Care necessary in Teething-Time.

**Need for Continual Watchfulness in Minding a Baby.**

**Treatment of Diarrhoea, Constipation, Colds, Hoarseness, Croup, and Convulsions.**

**MANAGEMENT OF CHILDREN TWO TO SEVEN YEARS OF AGE.**

**Their Food; Clothing; Daily Airing and Exercise; Play**—Importance of "Children's Hour"; Sleep; Good Habits, &c.; Treatment of Measles, Whooping-Cough, Adenoids; Mumps, Foreign Bodies in Eye, Ear, Nose, and Throat.

**HOME CARE OF THE INVALID.**

**Kind of Girl or Woman likely to Make the Best Home Nurse.**

**What a Home Nurse must be able to do for the Invalid**—In the Way of Cleanliness; Bedmaking, Changing Sheets, Ventilating Bedroom, &c.; Cooking and Serving Meals—The Making of Toast-Water, Beef-Tea, &c.; The Giving of Medicine; The Application of Fomentations, Mustard-Plasters, Poultices; Care during Time of Convalescence.

**Simple Remedies that should be kept properly labelled in every Home.**

**SIMPLE ACCOUNT OF CONSUMPTION**—What Consumption is; Open-Air Treatment; What Poor People can do to Fight the Disease in their own Homes.

EVILS OF SMOKING FOR BOYS UNDER TWENTY-ONE YEARS OF AGE.

EVILS OF OVER-INDULGENCE IN ALCOHOL.

CONCLUDING REMARKS—THE GIRLS' OUTLOOK ON LIFE.

### *Addendum B.*

*Lessons on Personal Hygiene and Helpfulness in the Home, suitable for Boys in Standards IV.-VII.*

(The lessons in Personal Hygiene may be given in lower Standards.)

#### *Part I.*

Cleanliness of body, hair, teeth, nails, boots, clothing.

General neatness, *immense* difference given to appearance by a clean collar—danger of celluloid ones. Use of a handkerchief.

Good manners in the home, the school, the street. (Boys allowed to read aloud "Christmas in the poor but mannerly home of Bob Cratchit.")

Courtesy to women and girls—opening and shutting doors and gates, raising the cap, handing chairs, &c. &c.

Benefits of fresh air—bedrooms at night especially.

Need for systematic exercise, good wholesome food, plenty of sleep. The daily lighting of the fire. The daily filling of coal-scuttles, boxes, &c., and chopping of sticks.

Manners of boys at mealtimes—no "company" manners.

Simple lessons on food—wholesome breakfasts, dinners, and teas for the working-man and his family.

The actual making of porridge (work of Scouts camping out, Territorials, young men who emigrate and simply *have* to "fend" for themselves).

Preparing a plate of bread-and-butter.

The making of a basin of bread and milk.

.. .. .. cup of cocoa.

.. .. .. coffee.

.. .. .. tea for an invalid mother.

How to boil and poach an egg, and how to cook bacon.

How to cook a chop or steak.

Uses of clothing—dangers of flannelette.

What to do should a child get on fire.

The proper cleaning of knives (quite commonly done by the School boys in working-class homes).

The cleaning of spoons and forks.

How a boy may scrub a floor for an ailing mother.

The care of plants.

The making of one's own bed. (Scouts, &c. again.)

#### *Part II.*

Lessons on the choice of a house and its simple artistic furnishing.

The refining influence of a well-kept garden, however small.

Choice of wall-papers—advantage of distempered walls.

How to paper a room (the actual papering of the inside of a large box or packing case).

How to make whitewash, and how to apply it.

Choice of pictures.

Evils of hire system.

Furnishing the living room—how a recess "bookcase" may be made by clever boys; also the making of pretty brackets, mantel boards, &c.

Furnishing of bedrooms—how to make a packing case into a dressing table ready for the women of the home to “drape.” The making, similarly, of a home-made “wardrobe.”

The re-enamelling of a bath.

Refinements of home, and how much this depends on boys.

Need for providing for a “rainy day”: savings banks at school and elsewhere. &c. Marketing for home, especially choice of meat (the weekly joint).

How boys may help to economise in the home (coal, gas, carpets, clothing).

*Spring-cleaning.*—How boys may legitimately (without losing any “manliness”) help—carpet beating and relaying; taking down, examining cords and replacing pictures; taking apart and putting together bedsteads; whitewashing, papering or distempering walls and ceilings; cleaning out cistern (tying up the “ball”), &c. &c.

*Clothing,* economical clothing for boys—its care. How to remove stains and a “shiny look”; care of boots and shoes; the putting on of *buttons* and the *darning of socks*. (A most necessary accomplishment for boys, in my opinion.)

*Treatment* (all practical) of *simple common ailments*: Headache and neuralgia; toothache (preventive measures, too); earache; colds, coughs, sore throats; cuts and bruises; burns and scalds; clothing catching fire; chilblains and chapped hands (preventive measures, too); fainting; corns and warts; sore eyes; sore heads (preventive measures, too).

### Part III.

How a boy may best mind his little brother.

Treatment of *measles*, wickedness of purposely exposing children to infection so as “to get it over”; immense care necessary in convalescence.

*Adenoids*—what they are, how caused, how removed.

Treatment of mumps.

Foreign bodies in eyes, ears, nose and throat.

*What a boy may do for an Invalid Mother.*—1. Make and serve tea, &c., in a dainty way. 2. Give her medicine (care necessary).

*Other valuable Lessons.*—The making of a bread and a linseed poultice—how to apply and when.

Remedies that should be kept “handy” and properly labelled in every home.

The First-aid case.

*Simple account of Consumption.*—Open-air treatment.—life in a sanatorium—need for *all* schools to be “open-air schools”—the groundless fear of draughts. How poor people may best fight the disease in their own homes.

Evils of *smoking* for boys under 21 years of age.

Evils of *gambling* (extra lesson not in the book.)

Evils of over-indulgence in *alcohol*.

*Concluding Lessons.*—Necessity for employing well the years of adolescence—the glorious opportunities given by evening schools.

The benefits of joining debating societies and singing classes—the extreme folly of wasting evenings in parading the streets, frequenting music halls, cinematograph shows, &c.

The need for “solid” reading—the desirability of joining the children’s branch of a Public Library *before* leaving School. Guidance in the choice of suitable books.

The great and crying need for putting one’s whole heart into one’s work—not everlastingly looking at the clock and putting on one’s hat and coat the moment it strikes “leaving time.” The need for *independence*, for making one’s *own* way in the world for honest and upright dealings with all classes of the community.

## Addendum C.

*Revised Curriculum of the Meanwood Road Senior Girls' Council School,  
Leeds.*

Time (in hours) devoted to the various Subjects.

Subject.	Standard	Standard	Standard	Standard	Standard
	III.	IV.	V.	VI.	VII.
English :—					
Reading - - - -	3 $\frac{3}{4}$	3	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$
Recitation - - -	1	1	1	1	1
Grammar (Standards IV.- VII. only).	—	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$
Composition - - -	1 $\frac{1}{2}$	1 $\frac{1}{2}$	2 $\frac{1}{4}$	2 $\frac{1}{4}$	2 $\frac{1}{4}$
Spelling (Word-building, Transcription, Dicta- tion).	2 $\frac{1}{4}$	1 $\frac{1}{2}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$
Copy books or Writing - Literature (extra subject)	$\frac{3}{4}$	—	—	—	—
Geography (including sketch maps).	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$
History - - - - -	—	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$
Arithmetic - - - -	3 $\frac{3}{4}$	3 $\frac{3}{4}$	3 $\frac{3}{4}$	3 $\frac{3}{4}$	3 $\frac{3}{4}$
Elementary Science :—					
Elementary lessons (in- cluding four on personal hygiene).	1 $\frac{1}{2}$	—	—	—	—
Nature Study - - -	—	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$
Housecraft :—					
Home management -	—	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$
Needlework (including mending for Standards V.-VII.) ( <i>See also   below.</i> )	2 $\frac{1}{4}$	2 $\frac{1}{4}$	2 $\frac{3}{4}$	2 $\frac{3}{4}$	2 $\frac{3}{4}$
Drawing - - - - -	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$
Singing - - - - -	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$
Physical Exercises and organised games. ( <i>See   also Swimming below.</i> )	1	1	1	1	1
Recreation - - - -	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$
Religious Instruction -	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$
Total - - - - -	27 $\frac{1}{2}$	27 $\frac{1}{2}$	27 $\frac{1}{2}$	27 $\frac{1}{2}$	27 $\frac{1}{2}$

In addition to the subjects shown in the above table the following are taken by certain pupils on particular days :—

Cookery (Standards VI. and VII.), on Thursdays and Fridays, 9.30 to 12 and 1.30 to 4.

Laundry (18 girls in Standards VI. and VII.), on Thursdays, 1.30 to 4.

Dressmaking (18 girls in Standards VI. and VII.), on Mondays, 1.30 to 4.

Swimming, on Wednesday mornings during season.



Mr. J. H. Judd, Superintendent of Handicraft  
in Manchester.

*(Evidence given on January 26th, 1912.)*

#### TEACHING OF HANDCRAFT IN SECONDARY SCHOOLS.

The witness stated that granting an essential part of the work of a Secondary School was to prepare boys (*a*) for the teaching profession, (*b*) for the higher posts in industry and commerce, (*c*) for further studies in Technical Colleges and Universities, it would be desirable to include Handicraft throughout the school courses, or at least during three out of the four years of prescribed studies, assuming the age at entry to be 11-12 and at leaving 15-16.

The Handicraft course should be common to the whole school between the ages of 11 and 14, when the period of specialisation should begin, according to the future careers of the boys.

#### TRAINING OF ELEMENTARY SCHOOL TEACHERS.

As Handwork in Elementary Schools is still further developed, the future teacher should devote the year preceding his entry into the Training College to obtaining instruction in those school-crafts most suitable for Elementary Schools.

#### TRAINING FOR INDUSTRY AND COMMERCE.

In industrial and commercial areas the training in Secondary Schools should be devised in strict accord with the requirements of the Higher Technical Schools and Colleges to which those who may ultimately become leaders of industry and commerce will go. Were this done, the present elementary work done in Technical Schools and Colleges would be unnecessary.

#### HANDCRAFT AS A HOBBY.

There were some boys in Secondary Schools whose future career would not be in the direction of either of those mentioned above, and yet who possessed dexterity in Handicraft. In such cases the witness would attempt to foster and develop the latent talents, with a view to encouraging the selection of a craft which would offer the greatest benefit as a recreation.

In preparing for the proficiency badges of the Scout movement, much good work could be accomplished during the third and fourth years for boys in the unclassified career section. The requirements necessary to obtain the various badges inculcated a spirit of resourcefulness, of determination to surmount difficulties, and the desire of acquiring general knowledge.

### THE CRAFT-MASTER.

If Handcraft is to become an effective force in modern education, it must be taken as seriously as any "traditional" subject; and the teacher must be possessor of as full a knowledge of and belief in its value as a modern factor in education as the teachers in Mathematics, Science, Languages, &c. do in their respective subjects.

In the witness' opinion there should be one specialist craft-master on the staff of each Secondary School; one who should be in full sympathy with child-life from childhood to adolescence, and one capable of linking up the Handcraft with other subjects in the curriculum. Some definite provision should be made in the Secondary School for the efficient training of those who desire to become specialist teachers, supervisors, or inspectors.

With the idea of making better provision for the training of Handcraft teachers, the witness suggested three methods—

- (1) Subsidies should be granted to existing Training Institutions;
- (2) The granting of Scholarships or Exhibitions; or
- (3) The establishment of a department of Manual Arts and Crafts at, say, three modern Universities (London, Leeds, and Birmingham) and the issue of a Diploma or Degree which would cover all the essentials of the pedagogy and technique of school handcrafts, which would be recognised by the Board of Education.

In America, provision was being made in several State Universities for the training of prospective teachers, &c. of school-crafts.

### DUTY OF THE SPECIALIST OR CRAFT-MASTER.

The person thus trained would become the adviser to the Headmaster on matters of Handwork correlation, the specialist responsible for the efficient teaching, together with supervision, throughout the school of the several phases of the work, in like manner as now obtains in Secondary Schools with the senior or organising master of Languages, Mathematics, or General Sciences, in their respective subjects.

### EFFECT OF THIS REFORM.

The witness expressed the opinion that under such a scheme the boy on leaving the Secondary School would have acquired what had been termed "industrial intelligence." Training to deal with things in the concrete would be added to his theoretic training.

### HANDWORK AND OTHER SUBJECTS.

The witness considered that Handcraft should be gradually developed side by side with other subjects; 23 years' experience had convinced him that only on these lines could Handcraft

take its proper place in the curriculum of the Secondary Schools.

#### SUGGESTED SCHEME OF HANDWORK.

*For children of 7-8 years of age.*

Paper designing, free cutting, and work in plastic material, plasticine, clay or pulp, and Brush-work.

*For children 8-9 years of age.*

Paper-modelling, illustration of fairy tales, &c. by Paper-cutting and mounting, further Plastic Modelling, and Brush-work applied to decorating or giving light and shade effects to Paper-cutting, and to the surface work of paper models.

*For children 9-10 years of age.*

Cardboard or heavier paper modelling, with alternative lessons in wire and ribbon iron-work.

*For children 10-11 years of age.*

Working in prepared wood with a few simple cutting tools. Making of toys of various flat types. Scale-size Cardboard-modelling.

*For children 11-12 years of age.*

Constructional work in wood, involving Geometric and Scale Drawing, the use of simple cutting and other tools.

*For children 12-13 years of age.*

Work should now be carried out at a centre, or, if possible, in a craft-room under the direction of a special teacher of Handcraft, and should consist of constructional and heavier Wood-work. The former is an amplification of the original light Wood-work scheme known as "Learn by doing," and the latter a modification of the scheme as introduced in 1888. These schemes of Light and Heavy Wood-work are suggestive only, and are now in use at the Manchester Grammar School.

*For children 13-14 years of age.*

Metal-work in tin, iron, brass, and copper.

Development of surfaces is now possible, and the use of heat in the manipulation and working of the metals.

In answer to questions the witness said he preferred light Wood-work to be taught in the junior parts of the school. The principles of light Wood-work could be carried out in the heavy Wood-work at a later stage.

The junior Manual work can be taught, generally speaking, individually, each class consisting of about 30 children. This would not mean more, but better, teachers.

Demonstrations should be given in the use of edged tools.

The whole of the work, as here suggested, with the exception of the heavy Wood-work, could be carried out in the ordinary classrooms by the ordinary teachers, and now forms part of the training of all students in the Manchester Education Committee's Day Training College.

In answer to questions the witness stated that whereas the equipment of a "Centre" cost from 4*l.* 10*s.* to 9*l.* per person, the equipment of an ordinary classroom cost only 5*s.* 6*d.* to 10*s.* 6*d.* per person. The present classrooms could easily be fitted for Manual work.

#### SUGGESTED COURSE FOR THOSE NOT DESTINED TO BECOME TEACHERS.

In the case of those boys who will be engaged in commerce and industry, the Handcraft of the last years of the school course should—more or less according to circumstances—be based on the more specialised work of the Schools of Technology, possibly with a bias towards the specific industry of the district. Where there is no predominant industry the course should be of such a general character as would enable the boys to adapt the principles to any calling that they may eventually enter. For this purpose there was probably nothing better than a course of Handcraft allied to the Science teaching, including, *e.g.*, the making of simple apparatus, the simplification of elaborate testing appliances, and the working out of problems in link, and cam and other mechanical movements.

#### EQUIPMENT OF THE CRAFT LABORATORY.

The witness stated that for Metal-work the craft laboratory would only require to be fitted up with a few additional machine tools and heavier metal-work appliances in addition to those used in the light Wood-work course. The usual gas furnaces used for melting metal could be readily adapted for simple forge-work, and the casting of details of apparatus in sand or plaster moulds would enable the boys to become familiar with the properties of metals under various processes of manipulation.

#### CORRELATION WITH OTHER SUBJECTS.

It would be desirable in every case that the whole of the course of study should be coherent, and that the whole staff of the school should collaborate to effect complete unity throughout every phase of the scheme. The Board of Education should—

- (1) determine what should be the minimum for a complete scheme :

- (2) determine how the sequence of Handwork and formwork should be established ;
- (3) decide as to the best method to secure fusion of interests in the preparation of efficient teachers ; and
- (4) decide what should be the minimum standard of proficiency of the work done, of the qualifications and status of the craft-master.

#### HANDWORK IN TRAINING COLLEGES.

The study of Handwork by students in Training Colleges was certainly not encouraged by the Training College Regulations. It is not examined, and—except for those preparing for Infant School work, and therefore taking a combined course in Handwork and Needlework—the Training College Authorities were not required to certify as to the proficiency of the students in the subject. It seems, therefore, possible to deal with Handwork in the Training Colleges in a perfunctory way, and nevertheless obey the letter of the Board's Regulations. On the other hand, if the subject were adequately treated, the students might obviously suffer from the point of view of examinations, although it was reasonable to believe they would be all the better from the point of view of practical teaching. The least the Board could do in the matter would be to place the subject amongst those in which the efficiency of the students will be tested.

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Mr. J. VAUGHAN, Superintendent of Drawing and Manual Instruction under the Glasgow School Board.

*(Evidence given October 22nd, 1909.)*

The witness stated, in answer to questions, that he was Superintendent of Art and Manual Work under the Glasgow School Board. All the work done in schools under the Board in the way of art or craft in day and evening came under his charge. He dealt with Primary Schools and Secondary Schools and also with the training of teachers. He had worked under the Glasgow School Board for the last eight years, and previously had been engaged in similar work in London. His connection with this work extended over a period of a little more than twenty years.

Though trained as an ordinary teacher, he had always had a leaning towards Art and Handwork. As a boy he had the run of engineering workshops and was constantly in touch with Handwork. He took up Science and Art teaching in 1882 or 1883, and in 1885, when the influence of the Swedish methods began to be felt in this country and Handwork classes for

teachers were started, he received an appointment as instructor in those classes.

#### HANDWORK IN PRIMARY SCHOOLS.

A special grant for "manual occupations" in Primary Schools was introduced by the Scotch Education Department in 1902. This was quite distinct from the grant for Wood-work, and was intended to encourage the Handwork of the junior scholars, and so bridge the gap which existed between the kindergarden and the Manual work of the senior classes. Such work had been done in some schools before 1902, but in that year the Department recognised it officially and gave extra grants to meet the cost of equipment.

Drawing was compulsory in Primary Schools in Scotland, but "manual occupations" were optional. They were in the nature of an extension of the drawing scheme, and a school might take one or more of the occupations suggested by the Scotch Code or any other scheme approved of by the Department. The most popular of the occupations—which was scarcely a "manual" occupation at all—was Brush Drawing, because it needed no other equipment than the drawing material, and could easily be carried out in the ordinary classrooms. The other suggested occupations were Modelling in clay, and constructive work in paper, and cardboard. In every case these occupations had to be taken in connection with Drawing, and were not allowed to stand alone.

"Manual occupations" were continued until about the age of 12, when the boys went to Wood-work and the girls to Cookery or Laundry-work. Though the "occupations" were optional, practically every school under the Glasgow Board took one or more of the subjects, and all boys and girls above the age of 12 received instruction in workshops or Domestic Science centres respectively. The Glasgow schools were all mixed, and usually boys and girls took the same Manual work until the age of 12; but in some schools boys and girls did the same Drawing but took different occupations. There was great variety of procedure in this respect; the Headmasters were left perfectly free to make the most suitable arrangements. Two hours per week, at least, had to be given to Drawing and Manual occupations.

#### SUPPLEMENTARY CLASSES.

At the top of the Elementary Schools was a system which did not exist in England. About the age of 12 an attempt was made to divide the pupils into two classes, according to the time they intended to remain at school. Those who were going to stay for three or four years were drafted to *Intermediate* or

Secondary Schools. Those who would leave at 14 were retained in Elementary Schools and formed "supplementary classes."<sup>\*</sup>

In these supplementary classes the education continued on the Elementary School lines. Practically no new ground was broken; the aim was simply to solidify what had been learnt already, and to give the education a practical turn. His Majesty's Inspectors held "qualifying" examinations periodically, to pass scholars on to supplementary classes or to Secondary Schools.

The subjects of instruction and times generally allotted to them were as follows:—

Boys.—*Industrial Course:*

English	-	-	-	9	hours per week.
Arithmetic	-	-	-	8	" " "
Drawing and manual work	-	-	-	5	" " "
Physical training	-	-	-	2½	" " "
Singing	-	-	-	½	" " "

GIRLS.—*Domestic Course:*

English	-	-	-	9	hours per week.
Arithmetic	-	-	-	5	" " "
Domestic Science	-	-	-	9	" " "
Physical training	-	-	-	1½	" " "
Singing	-	-	-	½	" " "

The processes in the various subjects were made as practical as possible: in Mathematics, the construction of graphs, the keeping of household accounts, &c.; in Manual work, the making of useful models, or simple apparatus for the physics or chemical laboratory. In Housewifery a flat was rented in one district, so that the work could be carried on under ordinary conditions. In other cases rooms had been built as part of the school premises. All the girls had a course of lectures from a lady doctor on health, sick nursing, and first aid. The supplementary classes were a great success and did important work at a critical stage. At present, 2,449 boys and 2,117 girls were in attendance at these classes in schools under the Glasgow Board. Handwork and other practical instruction formed a most important part of the curriculum. The boys attended twice a week at the Manual centre for a period of 2 hours and 1½ hours. This time was devoted to benchwork, mechanical drawing, and lessons on the growth and uses of timber, the structure of tools, &c. The remaining 1½ hours were given to artistic drawing, which was taught in the ordinary classroom.

\* Full information as to the aims and objects of the supplementary courses will be found in Circular 374 of the Scotch Education Department.

## HANDWORK IN SECONDARY SCHOOLS.

Boys and girls intending to stay at school for a sufficiently long period went to the Secondary School on passing the qualifying stage.

Of the Higher Schools under the Glasgow Board two were Intermediate Schools, with a three years' course; three were Secondary Schools, with a six years' course; and two High Schools, also with a six years' course. The Primary and Intermediate Schools were all free; in the Secondary Schools the fees were 7*s.* 6*d.* a quarter. There were, however, a number of scholarships. In the two High Schools the fees ranged from two guineas to about eight guineas a year.

Pupils went from the Secondary and High Schools direct to the Universities. At the end of the school course leaving certificates were awarded which exempted students from the preliminary examination at the University. Certificates were also granted at the end of the Intermediate stage, *i.e.*, at the end of the third year of the Higher School course.

The Secondary School system in Scotland differed somewhat from that of England in the fact that the private school practically did not exist. Even in the High Schools 90 per cent. of the pupils came from the public elementary schools of Glasgow and neighbourhood. The Intermediate and Secondary Schools in Glasgow all had large elementary departments—of 800 to 1,200 scholars. The High Schools also had elementary departments; but these were comparatively small. The scholars were drawn from a wider area than in the case of Intermediate and Secondary Schools.

The Intermediate and Secondary Schools were mixed, but the High Schools were for boys and girls respectively.

There was really no difference in function between the Intermediate and the Secondary Schools. The Intermediate corresponded generally to the lower part of a Secondary School. So far as English, Mathematics and Languages, Science and Drawing were concerned, the curriculum was practically the same for all schools. The aim was to obtain the Intermediate Leaving Certificate at the end of the third year and the full Leaving Certificate at the end of the fifth or sixth year. The Scotch Education Department conducted the examinations for both these certificates.

A course of Drawing, extending to 240 hours, spread over three or more years, was compulsory for *all* pupils taking the Intermediate Certificate. Manual Instruction was not a compulsory subject in Secondary Schools, but courses had been organised in two Intermediate and one Secondary School which allowed the pupils the choice of a classical, commercial, or manual training course.



The subjects and times in these courses were as follows :--

Subject.	First Year.		Second Year.	Third Year.
	Boys.	Girls.		
English - - -	8	8	6½	7
Mathematics - - -	8	8	6	6
French - - -	6	6	5	5
Science - - -	3	3	4	4
Drawing - - -	2	2	2	2
Drill - - -	1	1	1	1
Singing - - -	½	½	½	-
Latin <i>or</i> (Classical) - - -	-	-	5	5
German <i>or</i> (Commercial) - - -	-	-	5	5
Manual Training, including Mechanical Drawing and Mechanics.	1½	1½ (Sewing).	Manual Training 2 Mechanical Drawing 3 (Boys only).	Mechanical Drawing 2 Mechanics 2 Workshop Arithmetic 1 (Boys only).
Total - - -	30	30	30	30

The first-year work was precisely the same for all pupils, whichever course they might ultimately choose, except that the girls took Needlework while the boys were in the workshop. Many of the boys had had one or more years in the workshop before entering the Secondary Department, and the girls had had a similar time in Domestic work. In one of the schools there were at present 68 boys in the second year and 30 boys in the third year. Of the former, 29 were taking the Classical Course, 11 the Commercial Course, and 28 the Manual Training Course. In the third year, 23 were taking the Classical Course, 3 the Commercial Course, and 4 the Manual Training Course. The 23 pupils were mainly intending to go to the University to graduate as M.A., B.Sc., M.D., &c.—many of them ultimately becoming teachers. The Commercial and Manual Training pupils naturally left at about the age of 15 or 16 to go into offices or works.

The Manual Training Course had only been recently introduced. It might be extended in due course to some of the other Intermediate and Secondary Schools which at present only took the literary courses.

Until recently the Boys' High School had no Handwork other than Drawing, but a modelling room had just been fitted up, and every pupil now spent some time at Modelling. A small kiln had also been put into the room, so that a number of the objects modelled—small vases, bowls, tiles, "Ruskin" buttons, &c.—could be glazed and fired as well. This was part of the Art Department, which ensured not only good technique, but also good form and ornament. The boys were extremely keen on this work. A scheme showing the six years' course is appended.

The Girls' High School had no technical work, except a little Art Needlework, but it was quite probable that a post-intermediate certificate course in Domestic Science might be introduced for the benefit of the girls who did not intend to go to the University, but who desired to continue some studies after obtaining the Intermediate Certificate.

There were a number of other Secondary Schools within the municipal area of Glasgow, which were under other Educational Authorities. Of these, \*Allan Glen's School devoted particular attention to Science and Manual work.

The witness could not agree to give an option as between Drawing and other Handwork. He considered it undesirable to drop artistic drawing at any stage of the course, because of the influence of art upon craft. It had an enormous influence on Wood-work, not only in the execution of the models but in creating initiative and originality. Most of the Manual Instructors in Glasgow had also received a training in Art.

#### THE EDUCATIONAL VALUE OF HANDWORK.

There could be no doubt at all that the educational value of Handwork was very great. No opposition had been raised to its introduction in schools, and it was most popular with the scholars. It had been proved, moreover, by recent experience that pupils who spent even a good deal of time at Handwork could hold their own with the other pupils in the matter of examinations, in spite of the fact that those examinations took no account of Manual Instruction. It was the general opinion that the boys giving four or five hours a week to Drawing and Manual Instruction, although they had to take the same examinations in English, Mathematics, &c., as the other boys, nevertheless did just as well.

Not much importance need be attached to the statement that a boy dull in ordinary subjects would often take to Handwork and do it better than the others. Intellect counted in Handwork just as much as in anything else; but sometimes, it was true, this side of education would attract a boy who could not be reached by the ordinary school work. Doubtless it was true that certain intellectual boys were curiously unhandy, and that some, stupid at intellectual study, were skilful with their hands. Such cases, however, were exceptional, and might well be ignored. The introduction of Handwork into a school would not be justified by the interests of two or three. In any ordinary class of children in a school, there would always be found five or six who took to Literature intuitively, and others who took to other subjects, according to their natural bias. One could certainly get hold of some children through their hands better than through their other faculties. Hand-

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\*This School is now under the control of the Glasgow School Board (1912).

work, however, was worth its place in the curriculum of all schools on account of its good influence upon intellectual development. No apology need be made for its introduction, nor excuse found for it that it aided this or that type of pupil. The training of the hand was of the most vital importance intellectually, and that alone was the ground on which it should be introduced into educational processes.

Mentally defective children were being taught Handwork, and there was no doubt about the influence for good it had upon them. In some towns such children were taught trades in their schools. A strong claim to the inclusion of Handwork in the intermediate stage was that if a boy was going to specialise in the post-intermediate stage it was necessary to know whether he had any leaning towards the Handicraft side.

There was seldom any trouble with boys or girls in the teaching of Handwork on account of lack of attention. As to whether the habit of concentration formed in the workshop had any result on the children's attitude towards other branches of learning, it was very difficult to say. It could, however, be pointed out that a particular school in Glasgow, which gave more than the average time to Drawing and Manual Instruction, gained by far the best result at the last bursars' examination. This school presented 9 candidates and obtained 8 bursaries; the next best were 5 out of 12 and 11 out of 35 respectively. The inference was that the time spent on Handwork was not wasted, but led to greater intellectual freshness and greater concentration, since there was no reason to suppose the pupils of this particular school were endowed with better intellects. No doubt the constant concentration demanded and secured by Handwork must tend to become a habit and develop.

#### CENTRES FOR MANUAL INSTRUCTION.

All the Wood-work, Cookery and Laundry in Glasgow schools, both Primary and Secondary, were done in special centres. This was partly for the sake of economy, since in the case of Wood-work to build a workshop at each school would involve great cost. Apart from the building, the equipment for benches and tools cost about £2 0s. per head, and if its use were restricted to one school the centre would be idle for two or three days in the week. In Glasgow a school was never very far from a centre, so the difficulty of sending pupils was not great.

The mechanical drawing was all done in the workshop under the manual instructor. The artistic drawing was done in school by the class teacher. No fixed scheme was imposed upon the instructors. They were all left entirely free to plan and carry out schemes which they thought most suitable for their district and pupils. These schemes were submitted to the Superintendent as a matter of course. Great variety of work

was thus obtained, though the aims and objects were the same in all cases. Original work from the pupils was always encouraged.

#### THE TRAINING OF TEACHERS.

The training of teachers was a most important question. The ordinary artisan, even if very good, was as a rule so keen on getting the technique of the thing exactly right that he missed the educational part of the work. On the other hand, the trained teacher was apt to take too low a standard of execution.

In Glasgow the plan had been usually to take young men with a fairly good general education directly they had completed their apprenticeship as joiners, cabinetmakers, patternmakers, &c., and make them assistant instructors. They then attended classes for educational Handwork of various kinds, and obtained certificates from the Scotch Sloyd Association, the Board of Examinations for Educational Handwork, or the City and Guilds of London Institute. Many of them also went to Nääs for one or more courses. They further attended classes for Drawing, Painting, and Modelling. Special classes for courses in English and Psychology had also been formed for them. The result was that though they were all "artisans" they were a body of teachers enthusiastic in their work and, after a few years' experience, well qualified all round as teachers of Educational Handwork.

For the future, however, the Scotch Education Department was rightly endeavouring to secure a good general education for teachers of *all* subjects. Therefore, before entering upon a course of training for teaching in any subject the candidate must first obtain the intermediate leaving certificate. After that, those intending to become teachers of ordinary subjects went to a Secondary School as "Junior Students" for three years (the boys got Manual work as part of this course) and then on to the Training College or University. Those intending to become teachers of Domestic Subjects attended a school of Domestic Science, for practical work and courses of lectures in theory; intending Art teachers worked for the Diploma of the Glasgow School of Art; attended lectures on Education, Psychology, Hygiene, Physical Training, Practical Methods of Teaching, and also taught in schools under the witness' supervision for not less than 80 hours.

This system was in full swing as far as ordinary teachers, Domestic Science teachers, and Art teachers were concerned, but was not yet in operation for Manual Training teachers. The reason was that the prospect for really good boys was not sufficiently attractive.

The whole work of training teachers of all grades and subjects in Scotland was organised and managed by the four Provincial Committees for the Training of Teachers—Glasgow, Edinburgh, Aberdeen, and St. Andrews.

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## APPENDUM.

## SCHOOL BOARD OF GLASGOW.

## LEAVING CERTIFICATE.

*Syllabus for the High School of Glasgow, 1909-1910.*

*Intermediate Stage.*

- 1st Year. (a) Drawing in outline and light and shade from common objects, scientific apparatus, tools, etc., etc. The objects to be placed in easy positions and not more than two in any combination.  
Medium—lead-pencil.
- (b) Drawing and painting from natural specimens of flowers, foliage, fruit, shells, insects, etc., without background.  
Medium—pencil and pencil with water colour.
- (c) Modelling in clay, from fruit, eggs, leaves, and easy objects.
- (d) Memory drawing and time sketching.
- 2nd Year. (a) In the object drawing of the second year the objects will be placed in more difficult positions and combinations, and colour study will be added.  
Medium—crayon or pencil with water colour.
- (b) Drawing from natural specimens as at (b) 1st Year; more difficult exercises will be given, and a more finished treatment of the studies expected.
- (c) Modelling in clay, fruit, shells, and solid objects with surfaces of varying curvature, such as a hammer-head, a saw handle, a boot, hollow dishes, tiles, mouldings, and casts of ornament.
- (d) Time sketching and memory drawing.
- 3rd Year. (a) Full representation in pencil, chalk, or crayon of common objects. Combinations of three or more will be selected and placed in positions which give opportunity for the study of the apparent modification of form due to distance and foreshortening.
- (b) Drawing and painting from natural specimens; more attention will be given in these studies to the exact rendering of colour values, and the true relation of the object to the selected background will form part of the exercise.  
Medium—pencil or water colour.
- (c) Modelling as at (c) 2nd Year, with the introduction of simple pottery.
- (d) Memory drawing from objects which having been previously studied or from observations made out of doors.

*Higher Leaving Certificate for Specialists only.*

- 1st Year. (a) *Drawing from Objects.*—Any number and any accidental or selected grouping of objects may form the subject of study. Drawing from furniture, room fittings, the school buildings and houses in the neighbourhood. These exercises will be suitably graded according to the abilities of the pupils.  
Medium—chalk, crayon, or charcoal will be used for bold work and simple forms; pencil, pen and ink, or water colour, for finer studies and detail drawings.
- (b) *Nature Drawing.*—The studies under this head will include work in colour from such objects as shell fish, stuffed birds, fruit and flowers.  
Medium—oil colour, pastel or water colour.

- (c) Modelling in clay: (1) from fruit, leaves, shells and manufactured objects of good round form; (2) with design for the original fabrication of a tile, or simple pottery.
- 2nd Year. (a) Drawing from the cast, simple architectural ornaments and details of the human figure in addition to work similar to (a) 1st Year.
- (b) Same as at (b) 1st Year; more difficult exercises will be given and the work will be done to a larger scale.
- (c) Modelling as at (c) 1st Year. The design and constructive work will be carried further in the making of pottery. This will include "throwing" on the wheel; making of mould, and casting with "slip"; "glazing"; and "firing" in the kiln.
- (d) Rapid sketching from life, and memory drawing from outdoor observation. Imaginative sketches in illustration of games, occupations, lessons, or incidents in the daily life of the pupils.

*Note.*—With reference to the above evidence, which was given in October 1909, Mr. Vaughan writes, November 1912:—

"1. Since the foregoing evidence was given several important changes have taken place.

"Manual training in Wood-work, and Cookery, Laundry, and Dress-making are confined respectively to boys and girls of the Supplementary classes.

"Brush-drawing as a 'manual occupation' has been abandoned, but the use of colour, either by pastel or pigment, has been made an integral part of all drawing schemes for boys and girls.

"All boys below the Supplementary stage now take constructive work in paper or cardboard, or Clay-modelling as a manual occupation during part of the time the girls are at Needlework.

"This gives continuous schemes of Drawing and Handwork throughout the whole primary course of education for boys and girls.

"2. All boys and girls who leave school at the age of 14 and have not been at least one year in a Supplementary class, are now compelled to attend Continuation Classes for two evenings per week from September to June until they have made up the equivalent of a year in the Supplementary class. One of these evenings must be devoted to practical work—viz., Wood-work for boys, Domestic Subjects for girls. About 3,000 are in attendance under this compulsory byelaw this session.

"3. The Courses for teachers of Art, Handwork and Domestic Science are now in full operation according to the schemes shown below."

Extract from the Prospectus for 1912-13 of the Glasgow Provisional Committee for the Training of Teachers:—

#### COURSE F.\*

##### *Course of Professional Training for Art Masters.*

	Hours.
Hygiene and Physical Training	20
Psychology	10
Education	20
Methods and Practice	200

#### COURSE G.

##### *Course of Professional Training for Teachers of Domestic Science.*

I. For students holding, or qualifying for, a Diploma in Cookery, Laundry, and Housewifery—

\* This Course is taken after students have obtained the Diploma of the Glasgow School of Art.

	Hours.
Hygiene (Diploma Course) - - - - -	35
Education - - - - -	20
General Method - - - - -	16
Methods and Practice—	
Cookery - - - - -	90
Laundry - - - - -	60
Housewifery - - - - -	30

II. For students holding, or qualifying for, a Diploma in Dressmaking, Needlework, and Millinery—

	Hours.
Hygiene (Diploma Course) - - - - -	35
Education - - - - -	20
General Method - - - - -	16
Methods and Practice—	
Dressmaking - - - - -	45
Needlework - - - - -	45
Millinery (Diploma Course) - - - - -	30

For students aiming at securing a qualification as Teachers of Handwork, the following course has been approved provisionally by the Department:—

COURSE H.\*

I. Course for the Technical and Professional Training of Teachers of Handwork—

First Year—(October—June).	Hours.
Hygiene and Physical Training - - - - -	60
Methods and Practice (General Course) - - - - -	90
English - - - - -	60
Mathematics - - - - -	60
Nature Study - - - - -	60
Manual Work (including Special Methods) - - - - -	300
Free Drawing - - - - -	60
Mechanics - - - - -	60

750

Second Year—(October—June).

Physical Training - - - - -	30
Education (including a Special Course) - - - - -	90
English - - - - -	60
Applied Mathematics - - - - -	60
Mechanics - - - - -	60
Manual Work (including Special Methods and Practice in Teaching) - - - - -	390
Drawing and Art Crafts - - - - -	60

750

II. Curriculum for students holding the General Certificate with an endorsement under Article 39 for an Industrial Course—

One Year's Course—may be modified to meet individual cases—

	Hours.
Mechanics - - - - -	150
Applied Mathematics - - - - -	60
Manual Work and Methods - - - - -	540
Drawing and Art Crafts - - - - -	120
Education - - - - -	12

882

\* Before entering on this Course students must have obtained the Intermediate Leaving Certificate, or satisfy the Scotch Education Department that their general education is up to the same standard.

III. Temporary scheme for existing Teachers who can attend only in the evenings or on Saturdays or during vacation—

	Hours.
Educational Handwork (including Methods and Practice and Drawing) - - - - -	480
Education - - - - -	60
Hygiene - - - - -	30
Physical Science and Mechanics - - - - -	90
Nature Study - - - - -	60
English - - - - -	90
Mathematics and Applied Mathematics - - - - -	90
	900

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## B.—PERSONS ENGAGED IN TEACHING.

### (i) Men.

Mr. J. H. BADLEY, Headmaster of Bedales School, Petersfield.

*(Evidence given October 22nd, 1909.)*

### THE PLACE OF PRACTICAL WORK IN THE SECONDARY SCHOOL CURRICULUM.

The witness said that the last part of the Board of Education's reference, with regard to the position of Domestic Subjects in the curriculum of a girls' school, went to the root of the whole question of practical work in Secondary Schools. If the intention were only to give technical training—to make capable workers—then without question this work should be confined to the last year of school life, or postponed altogether till after the ordinary school course. If, on the other hand, it was considered an essential part of education, a valuable means of training, then it was no less necessary to take it right through the school. To the witness the chief value of handwork did *not* seem to be simply the giving of technical skill. That was very necessary for some, the future engineer, for example, and the housewife; but it was best given in the later years. Nor did Handwork seem to be necessary merely for the teaching of general handiness. That also had a great value; but it lay outside the class-room, and might be the work of the home, if the home could give it. Both these reasons for Handwork seemed negligible, as far as the Secondary School is



concerned, beside its real educational value. Without it the work of the school seemed to be too exclusively intellectual. It appealed mainly or solely to those who had a particular intellectual bent. For the others there was little in the ordinary school teaching, leaving out practical work, which touched their interest or their real motive. The whole work was too remote from life-interests in general, and, worst of all, was too much in the nature of an appeal to the individual alone without regard to social service.

Practical work of some kind seemed to the witness to be specially valuable, for three reasons :—

- (1) In the first place it was the real basis of intellectual training ; the brain was developed by the use of the hands. The average boy came to intellectual studies with much more keenness and interest and desire if introduced to it by some practical problem. It appealed to the instinctive interest of children, and provided a natural material for instruction. A foreign language was not a natural thing for a boy to interest himself in until he went to the country in which that language was spoken ; but Wood-work and Gardening were.
- (2) The boy saw for himself the results of his work ; that was a spur to try to right his mistakes. And he learnt his lessons from experience—the only way one could learn anything worth learning.
- (3) Again, practical work touched real motives in the child. In the first place, it gave him the desire to create something, to do something. It possessed reality for him, which class-room work did not. He never seemed to realise that the latter would be real to him some day. But put him into a workshop and he did real work which had a real reason and which he wanted to do.

And most of all it was the kind of work which roused the desire to help and was the best way of training a boy to understand that what he did was not for himself alone.

For these reasons Handwork ought to be an essential part of the education of every boy and girl from the first, combined with artistic and instructional work. In fact, it should be regarded as the centre and basis of all education.

#### THE KIND OF PRACTICAL WORK SUITABLE FOR SECONDARY SCHOOLS.

To come to the question of what could be done, there were many fields open. One thought first, of course, of things done with tools, Wood-work for boys and Sewing for girls. This was a necessary part of the work certainly, but not the whole of it.

Right through the course it was desirable not to confine the pupils too much to one particular narrow line. They should have not only carpenters' tools nor only joiners' jobs. From the first they should have a much wider range of material than was customary at present, including metal as well as wood. They should also be taught a greater variety of modes of dealing with these materials, and should be encouraged to make things for themselves, maybe toys, boats, small engines, anything they had a fancy to make. In the same way with Sewing, both girls and boys should be encouraged to make the things they wanted. As far as possible the things chosen should be real things, so as to get at the motive of doing real work and work for the common good. The pupils should not have too much teaching in the way to make things, but should find out for themselves. Experiments and construction should be encouraged from the first, with plenty of freedom to make mistakes. The workshop should be open at all times, so that the boy could experiment for himself; and he should be left to find out things for himself. The reason should only be given when he got into difficulties, and ways in which to make experiments should then be suggested. There the chief value lay.

There was a great deal of other practical work beside this kind of work with tools which, by itself, ignored much that appealed to the universal interest of children and the needs of mankind. Gardening for example. Give them a plot of ground for their own use to grow what they liked. In school time give them ground to till for the common good and let them grow things wanted for the community. Orchard, poultry, farm, and dairy work, all provided work which the children should be brought up to do. The best kind of training was that which they got on the land. Work in the garden should be largely experimental. The children should be encouraged to try different ways of growing things; with different kinds of soil; different depths; more or less water or manure, &c., so as to find out the best conditions. It was the experiment that was the valuable thing.

Another form of practical work that had great value was Drawing in connection with outdoor surveying, measuring, &c. Making plans of the class-room, &c. was not enough, but should be carried on to the surveying of playgrounds, gardens, and fields, so merging into Geometry and Geography—subjects which had much more meaning if begun by elementary surveying work. This work also brought in problems in Mathematics and so that subject assumed a real meaning to the pupils.

In Secondary Schools where there were playing fields, the making and care of them should be done, at any rate in part, by the boys, and not entirely by hired persons.

The indoor occupations like Cooking should certainly be taught to every boy and every girl—the primitive fundamental kind of cooking, the making of bread and the cooking of meat and vegetables. They were keenly interested in this kind of thing. For girls of course the work had to be carried much further.

In the boarding school there was a splendid opening for instruction in household duties. The girls should have practice in such things as laying the table and clearing away, not necessarily every day, but perhaps one day in the week, washing up (say one afternoon a week after tea), sorting linen another afternoon, and so on. Boys also should be responsible for making beds and keeping the class-rooms tidy, and should perform such tasks as moving the furniture out of any room that was wanted for music, lectures, &c. It was best not to have these things done entirely by servants, but to get the pupils to realise that one of their ways of serving the community was to do such things for themselves. In the witness's school the domestic work of the school was in the ordinary way done by servants; but a certain amount was done by the pupils every day. The cookery students, for example, did not cook the school meals; but one day a week they cooked a dinner for the staff.

Besides all these various occupations forming a necessary part of school work, a very valuable thing was the free time occupations. In the witness's school two evenings were set aside every week and a number of things were suggested from which the pupils could choose, *e.g.*, Carving, Leather-work, Weaving, Basket-making, Embroidery, Bookbinding. The selection was made by the pupils at the beginning of the term, and once made could not be changed for at least one term. They could take up a large number of occupations in different years, and find out which they liked best. They were left free to make things for themselves, or still more for others, toys for poor children, for example, anything of the kind being encouraged as far as possible to give a real interest for holidays as well as school.

The witness did not believe in the kind of Wood-work which consisted of unintelligible exercises. A great deal of what was used in the school was made in the workshop by the boys themselves. In the science laboratory, for example, all that could be made by the boys was made; the cricket pavilion was designed and made by the boys; the poultry houses also were made entirely by the boys. In the first stage the thing to be aimed at was the awakening of interest and the social motive. That was the primary object of the work; the technical side of the exercise was at first quite secondary, but had its place in the later stage, that of more specialised work. It might be

true that it was necessary to make boys do things they did not like; but it was no less fatal to make them do only things they disliked. Digging heavy clay was not exactly work a boy liked; but if he wanted to make a football ground he realised that a lot of groundwork was necessary.

#### GENERAL SKETCH OF CONDITIONS AT BEDALES SCHOOLS.

There was a Junior School and a Senior School. In the former there were 30 pupils, and in the Senior School 150, about 95 boys and 55 girls. The age of entrance to the Junior School was 8 or 9, and to the Senior School 11 or 12.

The average number in a class was about 15. There was never likely to be less than 8. Sometimes double classes were taken, *e.g.*, in literature or history, and there would then possibly be as many as 28 or 30.

In the last years the pupils worked in small groups, or individually. A boy of 16 knew what he wanted to become in after-life and might be left to work by himself.

Up to about 14 no distinction of sexes whatever was made. Boys and girls did just the same work. Girls went to the workshop and boys were taught to cook, and it was only after 14 that any necessity was found to distinguish, on the grounds of physical strength, interest, and future needs. After 16 the boys and girls did not work together at all, so far as Handwork was concerned. They specialised on different lines in both hand and head work; but in the latter, if they could work together, they usually did so. Sometimes boys and girls joined together in games under certain conditions. On one day a week, for instance, the older girls could, and the younger ones had to, join in the cricket with the boys. The older girls generally played separately; but one of them was a member of the First Eleven at cricket. It was necessary to exercise judgment as to whether the girls were strong enough to hold their own with the boys. The boys played alone in football, and the girls played hockey.

The number of hours given to brainwork varied. In the case of the younger children in the main school it was (including preparation hours) 4 hours a day; for the youngest of all it was only  $3\frac{1}{2}$  hours. The oldest pupils, definitely preparing for their future careers or for examinations, might spend as much as 7 hours a day on this class of work.

The whole of the morning was given to ordinary school work, about four hours or so. The afternoons were divided between games and occupations of the kind already described and free time. In the case of pupils under 16, no headwork of any kind was done in the afternoons. On two afternoons in the

week there were games, two others were absolutely free, and on two others some kind of Handwork was done.

Handwork received each week six hours in the afternoon, roughly divided into two hours to workshop for boys and Sewing for girls, two to Gardening, and two to Dairy work, &c., or outdoor Surveying. Only three things could be taken at one time, and to each of them was given not less than two hours each week during the whole term, at the end of which a change might be made. In addition, two evenings a week (one hour each) were devoted to voluntary work—hobby work. A great deal of Handwork was done in that way.

In the last years, after the age of 16, those preparing for examinations took a good deal of this Handwork time to give to examination work; but it was still insisted that some part of the afternoon should be spent out of doors. No pupil was allowed to drop it all; but in the last years it had to be narrowed down to some extent in order to give more time to the particular work for which they were preparing. Up till 16, all work of this kind was taken as being good, not for the sake of particular knowledge, but for general training, the interest it aroused, the way it led on to other studies, and, above all, the motives to which it appealed. It was not so much the result as the interest in the work that was important. After 16, however, the time had come for definite technical training, and it was insisted that the older girls should take a regular course of Domestic Economy, cooking meals, making dresses, &c., and that then boys who would need it should take Wood-work, Metal-work, Gardening, Agriculture, &c. as a technical study.

The school did not aim at being a classical school, though after 16, when the time for specialisation began, a pupil might specialise in Classics. He would have learnt Latin from 12 onwards, but would not have done Greek before 15 at earliest. Many had nevertheless done well in Classics. The witness had no doubt they lost little or nothing by not beginning Greek before 15; they got on much more rapidly, and got more out of it. As a rule, pupils devoted much more time to Mathematics and Science, unless particularly gifted in Language. The school had done very well in Science and Mathematics.

Far from the pupils being handicapped in scholarship examinations by the large amount of time given to Handwork, it was believed they gained enormously, because this class of work increased their general intelligence, so that in the last two years they were more able to make up for the time apparently lost to intellectual study lower down the school. This was conclusively proved by the number of scholarships won by pupils of Bedales. The main outcome of the course was the greater interest in work for its own sake, because from first to last it had its real basis in the pupils' own interest—not an interest put into them from outside by marks, prizes, &c.

Of the boys leaving Bedales School, the largest number had entered engineering in some form or other; then came other professions; next, farm work or horticulture, either in the Colonies or at home; and next to that business, the services, or some kind of craftsmanship, *e.g.*, cabinet making, &c. All of the professions were represented amongst the old boys.

As to means of applying to schools in towns such a system as that of Bedales, the witness said the main thing was to realise the fundamental value of practical work, and then apply it in the best way possible in the particular circumstances.

The cost of such a course of education as that at Bedales was of course greater than that of the ordinary school, because it required more land and apparatus of all kinds. The fees were 105*l.* a year right through the school, except in the case of a late-comer requiring special attention, when they were 120*l.*

*Note.*—With reference to the above evidence, which was given in October 1909, Mr. Badley writes, November 7th, 1912:—

“The numbers of the Senior School are now 170—105 boys and 65 girls. The girls no longer play hockey, but lacrosse, a much better game in every way. Some ‘Head work’ in the afternoon is done by all the Forms in the upper half of the School, which include some boys and girls considerably younger than 16. In most cases the study of classics is not carried beyond the standard of matriculation, or rather of the ‘School’ or ‘Higher’ Certificate examination, which give exemption from the first University examinations. As to results, some definite figures can now be given. Of all those who have gone on to the University from Bedales, 18 per cent. have obtained open scholarships, and 31 per cent. have taken first class honours. Of the later careers, the order, in point of numbers following each, is now (1) business, (2) work in connection with land, (3) engineering, (4) various professions, *e.g.*, teaching, architecture, medicine, law, (5) the public services, (6) crafts.”

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Mr. F. BASTOW, Headmaster of the Municipal Secondary School and Pupil-Teacher Centre, Accrington.

(*Evidence given July 7th, 1910.*)

#### ACCRINGTON MUNICIPAL SECONDARY SCHOOL AND PUPIL-TEACHER CENTRE.

The witness stated that there were in his School over 300 pupils (boys and girls) of whom about 60 were Pupil-Teachers. The latter attended for half-days only, some in the morning and some in the afternoon. Practically no differentiation was made as between the Pupil-Teachers and the other scholars; but occasionally the exigencies of organisation made it necessary to place the former in separate Classes. Nearly all the pupils in the School came from Elementary Schools, these being almost

the only Preparatory Schools in the neighbourhood, with the exception of a few small Private Schools. An attempt had been made to form a Preparatory Department in the school itself; but this had not met with much encouragement.

### THE VALUE OF HANDWORK.

The witness was of opinion that Handwork was very valuable in awakening the interest of boys in school work; it brought out their capacity and predisposed them to take an interest in other parts of the curriculum; in almost every case it reacted favourably upon the more intellectual side of the work. It was even more effective with girls than with boys, and was moreover especially necessary in industrial districts, where the girls as a rule had little opportunity of acquiring a knowledge of good Needlework and Cookery in their homes. The girls attending the witness's School, in the majority of cases, needed this kind of training, and took a genuine interest in it. They profited greatly by it, and parents testified to its value.

In the case of both boys and girls, however, under present conditions, education by means of practical work was not now so urgently needed as in former years, because in many towns such instruction was now a well-developed feature in the work of the Elementary Schools from which the Secondary School pupils were mainly derived.

### HANDCRAFT FOR BOYS.

The witness was of opinion that it was desirable that boys in Secondary Schools should have instruction in Handcraft during the first three years of their course, and that this should take the form of Wood-work during the first two years and of Metal-work in the third year. At present, in his own school, the boys took Wood-work during the first two years only; but he wished to extend this to a third year, and to introduce Metal-work, especially as many of the boys entered the engineering trades. The time devoted to the Handwork was one lesson of 80 minutes each week.

As regards the character of the work done, endeavour was made to select objects in which the boys would be really interested. Certain of the apparatus used in the Physics laboratory was made in the school workshop, and it was found that the boys took a special pride in apparatus made by themselves. They had also taken great pleasure in the making of small yachts, had given attention to the work outside school hours, and had found out for themselves a great deal about the make of well-known yachts. The mere performance of exercises which were not applied to the making of definite objects exhausted the interest of boys after a time.

Manual instruction was taught by a member of the regular staff of the school, who had been trained as a carpenter, and was also a man of exceptional teaching ability. He also taught Chemistry in the school and in evening Science Classes. Physics was taken by another member of the staff, who also taught some Mathematics. The arrangement and supervision of the Handwork course was left entirely to the Manual Instructor, subject to conference with the Headmaster; there was no regular plan of co-operation between the former and the Physics Master, but informal discussions took place between them.

No steps had so far been taken to co-ordinate the Handcraft with the teaching of Geography. Practical lessons in the latter were, however, given in the form of excursions. These were voluntary, and took place on Saturday afternoons, but were very well attended.

#### HOUSECRAFT FOR GIRLS.

The witness was in favour of giving instruction in Housecraft to girls in Secondary Schools, and he thought that this should be concentrated on the first three years of their course, so that all might receive it, for it must be remembered that in industrial districts, where such instruction was specially valuable, the average Secondary School life of girls was only about three years. He did not think it desirable to defer this form of education until after the close of the Secondary School course unless some means could be adopted of ensuring that the girls did actually receive it then.

In the witness's School, instruction in Housecraft was given during the first three years of the course (one lesson of 80 minutes' duration per week), and took the form of Cookery during the winter and of Needlework and Dressmaking in the autumn and summer.

Cookery instruction had only recently been introduced into the School, and up to the present it had not been co-ordinated to any great extent with the Science. The work consisted almost entirely in teaching the practical art of Cookery. The witness was of opinion that it was important to teach the scientific principles involved in the various processes, and he was endeavouring to secure that this side of the work should be brought out more prominently than it was at present.

#### SCIENCE.

Science was taken right through the course by both boys and girls. During the first two years the boys and girls had the same course; but after the second year it was thought better to give the girls Natural Science rather than Physics and Chemistry.



The witness agreed that it might be an advantage to give the girls a course of Science which was brought into close relation with the Cookery. This would mean, however, that the Science Classes throughout would have to be split into separate divisions for boys and girls. This was not necessary at present.

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Mr. JOHN BERRY, Instructor of Handwork, &c., under the  
Leeds Education Committee.

*(Evidence given September 30th, 1909.)*

At the request of the Committee the witness gave some particulars of his experience.

After an education at a Board School he had served an apprenticeship of five years as a pupil teacher. At the end of this time, which was spent under a rather unsympathetic headmaster, he left the teaching profession and went into an engineering shop at Halifax. This was at the age of 18. For four years he was apprenticed as a fitter and afterwards became a journeyman. A period of trade depression occurred about this time, and being desirous of improving his position he decided to take up teaching again. He therefore entered a school in Newport (Mon.) as an ex-pupil-teacher, and after remaining in that capacity for  $2\frac{1}{2}$  years, went to Bangor, where he qualified as a certificated teacher. He then returned to South Wales and served as a certificated teacher in the Rhondda Valley for some months, until he obtained an appointment under the Ipswich School Board. In this latter position he was required to introduce Metal-work into the higher grade school as a finishing top to Wood-work, and had for this purpose to equip an infants' school as a Metal-work centre. He stayed here for 15 months and then obtained a post in a Manual Instruction centre in Leeds, where he had about two hundred boys a week. At the end of two years the Leeds School Board had equipped a fine Metal-work centre in the Central Higher Grade School, and he was appointed to take charge of it. Again after two years, mainly because he was desirous of gaining experience of a Secondary School, he applied for and secured a post in the Scarborough Municipal Secondary School. He remained there for three years and then returned to Leeds to take charge of the Manual Instruction in the Modern School. At the present time he was in charge of the Manual Instruction at the Modern School, as well as the responsible teacher (*i.e.*, in handwork) of the students in training of the City Training College of the Leeds Education Committee. He took classes in the evening for the training of teachers in Manual work. He spent a large part of the summer holidays in teaching at the summer school and, in the evening, took theoretical and practical Mechanics and Mathematics for the engineering students. He

also had the training of all the Manual Instructors in Leeds in Metal-work, and for seven years had had charge of the training in Handwork of all the teachers who were teaching that subject in the Elementary and Secondary Schools in the borough. So that with two or three exceptions all the men in Leeds who were qualified in Metal-work had studied under him at some time. At the present time there were 43 men teaching Wood- and Metal-work in Elementary Schools in Leeds and four in Secondary Schools. In addition to these duties he had for six years been connected with the summer courses for teachers in Wood- and Metal-work which were held at Scarborough; and one year at Ambleside.

### THE EDUCATIONAL VALUE OF HANDWORK.

The witness had great belief in the principle of Handwork as a subject of education. Children acquired an immense amount of information when they were given the opportunity to draw or to work with tools, and they were able to learn things which in other circumstances they would not understand. So much importance did he attach to Handwork that he considered that in every house where there were children the parlour should be a less important room than the workroom. He believed that parents often drove their children into the streets by their wish to have a "nice" house. For his own part he was giving all his children a course of Handwork at home.

He was convinced that Handwork was of great educational value. He claimed for it what the Physics and Chemistry masters claimed for their subjects. It was simply educational. The most important work of the school was the practical work. If in physics a boy made his own apparatus he would use it with far more intelligence than if using what to him was an unknown thing. Practical work reached a side of a boy that book work did not touch, and the boy himself was conscious of his own development. Some boys who made poor scholars at present would be capable of doing good work with their fingers. The success in this way often proved a spur and gave them heart to try again in the other branches of school work. It also enables many boys to realise their natural bent.

### SUGGESTIONS FOR A COURSE OF HANDWORK.

One of the main requirements of a Handwork course was that the work should progress by gradual stages from the easy to the difficult. A start should be made as soon as a child entered a school to teach him through his hands and to encourage him to acquire the ability to express himself. From kindergarten work he should go to Clay-modelling or Modelling of any description by which he could be brought into contact with everyday things. The teacher defeated his purpose if he sought

his models outside the ordinary life of his pupils. Any objects on the breakfast or the dinner table or about the home or school would do much better. The child's activity should be developed by means of those things of which he had experience.

From the age of 7 to 10 Paper- and Cardboard-modelling were suitable. At first the children would not be strong enough to cut cardboard. They should therefore start with paper and then proceed to thin cardboard, and afterwards to Cardboard-modelling proper, making objects and increasing their information in that way. The best method of teaching a child what a cube was, for instance, was to let him make a cube, and then ask him to tell you how many sides and corners it had, and so on.

From the age of 10 the children could continue their cardboard work on geometrical lines, really learning practical Geometry before it was taught.

At 11 Wood-work should be introduced as simply as possible, and should continue until about 14. As soon as a boy had acquired so much knowledge that he began to feel rather big, it might be taken that the value of Wood-work for that boy had come to an end. He should therefore be taken from it and introduced to some other form of Handwork of which the simplest form was as difficult as the most advanced form of the previous course. The fairly well-trained boy reached at about the age of 14 as high a standard of efficiency in Wood-work as was desirable. It had to be remembered that the object was not to turn out a skilled cabinet maker. The boy needed to acquire a certain amount of skill without developing into an automatic worker. It was therefore advisable after a certain point to switch a boy off Wood-work on to some new form of Handwork. For this reason it was desirable that every boy should take up Metal-work. When boys entered the Metal-work room they came upon processes which were new to them, and they became possessed of the desire to make themselves masters of things of which they were not masters. This spirit of striving had an excellent effect.

In the Leeds Secondary Schools, a course of Handwork after the fifth form was provided for lads mechanically inclined. In this course they did metal work and apparatus making. Also on one afternoon in every two months these boys were invited to bring from home work they desired to do, the idea being to develop a love of Handwork out of school and to encourage hobbies. In this connection the effect of Handwork upon the home life of boys was important. The witness could give numerous instances of testimony by parents as to the improvement in their boys, and of boys inclined to seek amusements in the streets who had been so influenced by the course in Handwork that they had come to take a great interest in their homes. They became useful members of the household and were able to apply what knowledge they acquired at school to their everyday life.

## THE EQUIPMENT FOR HANDWORK.

The witness was rather prejudiced against the system of having a separate room or centre for Wood-work, except for that advanced work for which it was essential to have special appliances. This subject should be worked into the school; when regarded as an "extra" it lost dignity and failed to take its place as a part of the school fabric. The teacher himself remained, as it were, outside the school. It was therefore preferable to teach the child in its ordinary classroom. The work done in the ordinary classroom would not, of course, be of a kind requiring the use of all the ordinary carpenter's tools. The wood used should be planed, and of a kind that could be split instead of having to be sawn. For the heavier work a specially equipped place was necessary, but the child would not be ready for such work until after the age of 12.

In the case of a village school where it was not possible to secure the proper equipment for Wood-work, the witness believed that he could devise a scheme of Wood-work with the use of a knife and a few simple tools only.\*

## THE CO-ORDINATION OF HANDWORK WITH SCIENCE.

It was a very good thing to bring the Science work and the Handwork into close relation with one another. But it was necessary that the boy should have acquired sufficient skill in the use of his tools before he commenced to make the apparatus required in the physics laboratory. At the present moment one of the most valuable phases in Handwork was the making of the physics apparatus; it was certainly quite wrong to allow a child to use apparatus made by somebody else. A great part of the money spent in apparatus grants was wasted. It was almost essential in a good Physics teacher that he should have some skill in Handwork. On the other hand, if the Handwork teacher was not skilled in Physics or Chemistry he should have the sympathy and co-operation of the master teaching those subjects, who amongst other things should give him a list of the apparatus required for the science work. When all the apparatus that was needed had been made, the boys could be allowed to take their pieces home and then start again.

## TEACHERS OF HANDWORK.

The witness said that what caused him to become a manual instructor was that on his return to the teaching profession after working for some years as an engineer he was forced

\* The witness has since furnished the Committee with some suggestions for a course of Handwork in country schools, together with a list of the tools and material needed, and a complete set of models of the kind proposed, made by himself under conditions similar to those which might obtain in the schools in question. The cost of equipment he estimates at about 10*l.* for 20 boys, no special room being required. Particulars of the suggested course are printed in Appendix A. (see p. 84).

to the conclusion that there was something lacking in the teachers of the Elementary Schools. They seemed to be limited in their ideas and notions, and not to come into contact with the world. They were not thought much of by the fathers of their pupils, who generally had the impression that there was something in the education of the average teacher that did not fit him to train children for practical life. The thing lacking was that they never came into contact with practical things, and were not able to appreciate that by which the majority of parents got their living. Consequently they could not teach a boy in such a way as to make him feel an interest in a living world.

As regards the teachers of Handwork, they were, as a rule, lacking in general education. A great many of them had not been teachers to start with, but artisans, &c. This was improving, but out of a total of about 300 teachers taken by the witness in his summer courses, only about 100 had been teachers to start with, and even this proportion was perhaps above the normal. It was generally the promise of a better salary and more regular employment that tempted a man to leave the work for which he had been trained in order to take up teaching. The average artisan taught mechanically; he did not teach his subject because his heart was in it, but to earn his living. Now many are trying to remedy this defect, and a number of instances have come to his knowledge where men have taken the Certificate Examination after taking up this work.

In order that the manual work teacher might be recognised as one of the ordinary staff of the school, it was necessary in the first place to insist upon his training in the ordinary school subjects. Having done this, it was essential for a good manual instructor that he should possess the spirit of Manual work.

It was encouraging to note that there was undoubtedly a steady improvement in the class of teachers of Handwork. At the summer courses this year the students were better than ever before. They were mostly men engaged in teaching in Secondary Schools, but there was one Director of Education in a certain county, and two headmasters of Secondary Schools.

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Mr. J. W. BURN, Headmaster of the Islington, Cloudesley Elder Boys' Special School for Mentally Defective Children (under the London County Council).

*(Evidence given June 5th, 1912.)*

Witness explained that he was not engaged upon Secondary education, but was the Headmaster of a school under the London County Council for Mentally Defective boys of 12 to 16 years of age. In that capacity he was closely associated with different forms of Handwork and had given a good deal of attention to the subject in its various bearings.

The school contained 98 boys at present. It had been open for three years, but witness had been engaged in similar work far longer than that. The school contained those boys who had been certified as unable to obtain benefit from the ordinary curriculum of an Elementary School. They were neither idiots nor imbeciles, but were those boys who in the ordinary Elementary School could make no progress. When they came to his school it was known they could not do the work of an ordinary Elementary School.

Questioned as to the cause of the mental deficiency, witness said that he thought it was mainly due to the shocking condition of the environment in which the children spent their early lives.

Although the boys generally came to his school at 12 years of age and remained till the age of 16, occasionally they came at 10 years of age and sometimes at 11; but these were generally big boys and unsuitable to remain in the junior mixed schools under women teachers.

In answer to questions, the witness stated that the boys came to his school from the junior schools for mentally defective children. There were twelve such schools as his in London. The children in the junior "defective" schools all came from the Elementary Schools, with the exception of a few cases. Occasionally a few children in those schools were fit to be returned to the ordinary Elementary School. In many cases the senses of the children, *e.g.*, their sight, hearing and speech, were defective as well as their minds, which was an additional handicap to them.

One-half of the whole time of the school was spent in Manual work. Generally speaking, the boys made very good progress indeed. Even the very worst children undoubtedly received a good deal of benefit from it, although a certain percentage of the boys never became self-supporting in a decent way. The most promising were able, however, when they left school, to go out and earn their own living—a fact which the witness attributed to their having done so much Manual work at school. They were not book scholars and consequently it was quite impossible for them to earn their own living except with their hands.

The boy who received a good training in Wood-work would not necessarily become a carpenter. Many of the boys were suited for posts as servants, such as stable-men, grooms, &c.

There was an organisation which endeavoured to provide employment for the boys on leaving school, but it was not yet in perfect order. He emphasised the need for better machinery to be set up to provide employment for the boys on leaving school. Witness wanted to see a more systematic way of using such boys as dustmen, road-sweepers, &c.

The mental power of the boys was improved beyond all question by Manual work. After a course they were able to

read, write and to understand things, though they seldom got beyond the ordinary third standard work. The Arithmetic was confined to everyday life such as weights and measures, and actual transactions (for instance, calculation of quantities and values, giving of change, finding cost of goods, &c.). It was purely practical Arithmetic as involved in everyday life. Reading, Writing and Composition was also taught. Object lessons connected with the Manual work were given. Lessons were given, for instance, on different kinds of timber used in Wood-work, and on different kinds of leather used in the Boot-making. No Cookery or Laundry work was taught to the boys in this particular school. Wood-work and Boot-making and repairing were taught, and lighter forms of work were provided for the very dull and the very young boys. Every boy took every subject when he first came to the school. Each boy took at least three subjects either in the Wood-work room, the Boot-making room or the class-room. In the last year of a boy's school life, if he showed any particular aptitude for any one subject he devoted the whole of his manual time to that one subject.

Witness thought that a considerable part of the time in a boys' Secondary School should be given to practical work, part of which should be what was generally known as Manual Work. At least 12 hours a week should be given to Science and Mathematics, which should include not less than four hours' practical work. In addition to this, boys from 11 to 14 years of age should spend two hours a week at Manual Work. By Practical Work in the Science course, he meant practical Physics, laboratory work and practical Mechanics. Of course, practical Chemistry and practical Physics were the chief things. With regard to the relative merits of Physics and Chemistry he would take Physics in preference to Chemistry. He was of opinion that Physics were more educative than Chemistry. The four hours' practical work in Science should not include the making of apparatus, which should be done in the manual work room. It would be a great mistake to concentrate the manual training in, for instance, a half year.

The witness mentioned a case of a Secondary School from which many academic successes were obtained and the number of honours were far above the average; and this in spite of (or perhaps because of) the fact that the boys continued to spend  $1\frac{1}{2}$  hours a week at Manual work right up to the time of their examinations. In that school much of the apparatus for Science work was made in the manual room, and some exceedingly beautiful apparatus was made. His inference from this was that the practical work helped the boy in his other work. He thought that to stop the practical work at a certain age would be a mistake.

The witness would include Wood-work and Metal-work in the Practical Work. He did not, however, recommend that the

Wood-work course should take the form of Wood-carving or that the Metal-work course should take the form of *repoussé* work, as these subjects were not purely manual subjects, but Art work.

Of the various forms of Manual work, a good course of Wood-work had, in the witness's opinion, the greatest educational value, Metal-work coming next.

There was the further consideration that Practical work ought to be provided for every boy as an outlet for his energy; especially in the case of those children who were too weak or too small to play games. In answer to questions the witness said that he did not think that games trained quite the same qualities as Manual work.

Witness would be very sorry to see Physical Exercises take the place of Manual work. He expressed incidentally his belief that boys should be left to themselves at times in playing and not use all their recreation time in playing "organised games." Witness considered it most unsuitable to take organised games in the ordinary play-time of 10 minutes.

Witness said the children in all schools might be divided as follows: At the top a small percentage of distinctly clever and brilliant children; at the bottom, a small percentage again of very dull children; and between them a great mass of children of quite ordinary and satisfactory intelligence. His view was that all those types derived immense benefit from Manual training. The relief to the dull boy of having some means of expression was very marked. Often such boys had been doing something which was beyond their powers and which they detested. It would be an excellent thing to give such boys an extra course of Manual work to improve them. Witness instanced the case of a dull boy being given two hours a day at Manual work, since when he had done remarkably well. The bright child would also obtain benefit from the change of occupation and the moral discipline involved. Whereas book-work caused such a child no trouble and called forth very little effort, Wood-work on the other hand required the very closest and most painstaking attention. That class of boy might learn discipline from Manual work which he would not learn from book-work.

One great feature in the results of a course of Wood- or Metal-work was that the finished exercise could be referred by the child himself to an exact standard. It was most important that a child should be able to judge his own work. Working in wood and metal enabled him to do this; whereas in essay writing, for instance, he had to depend upon the verdict of another party without knowing why or where he was wrong. In this respect some kinds of Manual work were not as satisfactory as others. Carving, for example, was an artistic subject, and when a piece of work was finished it was impossible to say whether the result was what the boy set out to achieve. The same fault could be found with the present idea of Drawing



from nature. Such occupations were mainly decorative forms of Art, they were nothing in themselves.

Witness thought that Manual work led to a more healthy tone of mind and body; the powers of attention and extreme accuracy were developed; and judgment and self-criticism were cultivated. He had a high opinion of the educational value of Handwork in its broadest sense. He would like to see it form part of the work of every school of whatever grade in the country. Even in schools where the boys remained till the age of 18, and in the case of those boys whose work lay mainly in Languages and Mathematics he thought that three hours a week should be devoted to Manual work.

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Professor J. J. FINDLAY, Professor of Education in the  
University of Manchester.

*(Evidence given October 10th, 1912.)*

#### TEACHERS OF MANUAL AND DOMESTIC SUBJECTS.

Witness advised that the principal and directive part of Manual and Domestic work in Secondary Schools should be placed in the hands of teachers of the regular "secondary" type, *i.e.*, those who had taken a University degree or its equivalent in Arts, Science (including, however, Technical Science), or Fine Arts, preceded by Matriculation and followed by a year's professional training. Teachers so trained who possessed any talent for crafts or for "Domestic" work should be encouraged to take these up in holiday courses and could receive some certificate or other evidence of competency to teach them. He did not regard the actual acquirement of the necessary skill so important as to need a special year's training. Men and women who care for these pursuits can and do cultivate them at their own bench and in their own kitchen (without loss of refinement or culture). Nor was he of opinion that there was sufficient body of substance in Manual and Domestic subjects to justify their being treated as separate University "studies" for a Degree course. A general, liberal culture would, he thought, be on the whole more beneficial.

Hence degrees or diplomas for such subjects seemed to witness to be out of place; holiday courses, or Saturday weekly courses of equivalent length, followed by a certificate were adequate. Students certainly required a large amount of practice at the bench, or the range, but this could be most profitably carried on in the home.

Witness instanced the case of a Cambridge man who had taken the regular course of training, but had a pronounced taste for Fine Arts and Handicrafts. He was now lecturing on Education and also teaching Arts and Handicraft in the

University Training Department. He was also acquainted with women teachers of Domestic Subjects in Secondary Schools of a similar type.

In answer to questions, witness said that a capable teacher could easily pick up such subjects. There should be someone on the staff of every boys' school who could direct the Handwork, and on the staff of every girls' school there usually are several women who can direct the Domestic Work including Needlework.

#### THE "ARTISAN" TEACHER.

Witness thought that considerable help could be rendered in the teaching of Manual and Domestic Subjects by artisans. For example, mechanics, cooks and capable women of household experience could often be found to help on the practical side of a school as caretakers and teachers in combination; caretakers were often men who could manage the heating apparatus, electric lighting, &c., and such men could render assistance in laboratories and workshops. Artisans should, however, work under the direction of a professional teacher of more liberal culture. The witness himself had had several years' experience in employing "handymen" as caretakers helping to teach his boys.

#### THE PLACE OF MANUAL AND DOMESTIC SUBJECTS IN THE CURRICULUM OF A SECONDARY SCHOOL.

The foregoing opinions were partly influenced by more fundamental convictions that the witness held as to the place that these pursuits should occupy in the Secondary School. In his opinion the distinctive place for them was not between the ages of 13 and 16, but between the ages of 8 and 13. He thought the kindling of interest in such subjects, and therefore practical work in them, should come before the stage of adolescence was reached. Such subjects could not be regarded as means of culture for the early years of adolescence in the same way as they could for the earlier years of school life. The early years of adolescence demanded occupation and mental food of another sort, in which (1) "Humanistic" or æsthetic studies played the chief part, and in which (2) every scholar had the chance of trying his powers in almost any direction in which he seemed to find interest. Further, to force Joinery or Cookery on every pupil in a Secondary School would be a mistake, as so many subjects were already taken.

At the same time, witness was convinced that a workshop and kitchen should be part of the equipment of a Secondary School (to be used by the institution for its daily needs, not merely as a place for lessons and exercises), and that pupils who were keen to cultivate further their powers in these crafts should be encouraged to do so. If a boy was to become

an engineer, for instance, he ought to have some Handwork training at his Secondary School.

Witness attached very great importance to the value from the social point of view of all children, long before the period of adolescence, being in sympathy with Manual and Domestic occupations. This sympathy ought to be created in the home, and shared by the school.

Witness did not see what could be made of Wood-work, Cookery, or Laundry-work in the school as means of liberal culture; Needlework, however, was indifferent, if made to include, as it should, the decorative arts and tapestry work. There was a danger in trying to teach Domestic Subjects and calling them "Domestic Science," a proceeding which hindered the function of Science teaching. As regards Carpentry, although witness would like to see every boy able to use tools, he did not see how the subject could be organised in the Secondary School to make it successful. If boys learnt such work in the Elementary School he would not trouble about it in the general curriculum of the Secondary School. The distinctive feature of a good Secondary School should be connected with the "humanistic" studies.

After the age of 13 or 14 the Secondary School curriculum should be governed by these three factors:—

- (a) The new stage of life demanded Literature, History, and Science in the Humanistic aspects as the central topic for serious study.
- (b) Individuals differed so much that ample time should be given for each scholar to pursue his own "hobby."
- (c) The future career of the scholar is more or less clear, hence the Secondary School should pay regard to the variety of needs which the after-career may present.

Witness agreed that often Manual work served a useful purpose in illustrating other subjects; as a condition of this, however, the object made must be related to the subject in question. He doubted whether the establishment of a *separate* Handwork course could be justified. He was afraid of the specialist Handwork teacher taking the place of the ordinary teacher; if the subject was taught at all, it would be better to employ a good all-round man. As an illustration of this point witness mentioned that in the Practising School with which he was familiar two classes were studying the discovery of America by Columbus; the pupils needed to understand a sphere, and the master was showing them how to make one; had the master been a Manual instructor, he would probably have had no interest in the relationships between Humanities and the craft.

As to the practice of taking children to a centre for Manual and Domestic subjects, this led to their being dissociated from the rest of the school work. In the Practising School above referred to, no Handwork was done unless it related either to other branches of the curriculum, or to practical needs in

equipment or apparatus. The boys made such things as notice boards, waste-paper baskets, &c. He regarded the Manual work in the school as a development of the humanities studies, and so far as æsthetic elements in the crafts could be made predominant, they had a claim on the Secondary School Curriculum; Wood-Carving and Art Needlework were mentioned as examples. It appeared to the witness that the educative value of practical work was modified by change from childhood to adolescence.

In answer to questions, witness said that he did not consider it advisable to set aside a definite part of the regular Secondary School time-table for Manual work. Such work should be done in the time given to the lessons with which it was connected; the pupils should, however, go into the workshop. The more rigid the time-table, the more the subject lost in educative value. He was in favour of Cardboard-modelling and practical work leading up to Heavy Wood-work being taught in the lower forms of Secondary Schools only when such subjects were related to the school needs. He thought there was the highest educational value in making things required in the school.

Questioned as to the power that Handwork exerts in showing the pupil his own mistakes, the witness answered that the same was true of practical Science. It was a mistake to be aiming at too much accuracy; he mistrusted the assertion that this conduced to moral benefit. Children ought to do their best, but not be forced by pedantical insistence on "finish." The demand for accuracy is a fetish which takes no account of children's powers; the amount of finish for any article depends on the use to which you put it.

#### VOCATIONAL HANDWORK.

Witness considered that if a boy was going into commercial life he should commence to specialise at 14 or 15 years of age. The great majority of such boys left school at 16 or 17 years of age, and they ought to devote one-third of their time to specialised study. He advocated the establishment of Trade Schools for those who were going into industrial life; but he did not see his way to advocate the establishment of Domestic Schools.

#### BACKWARD BOYS.

Witness could not understand why boys, to whom the ordinary school studies were not congenial, attended a Secondary School. On some side or other, unless a boy was very abnormal, humanistic studies had their appeal. When a boy to whom such studies did not appeal reached adolescence, and some idea could be gained of his future career, then he should be placed

in a "Trade" School. Such schools were "Secondary" Schools, using the word in its widest sense as applicable to all ranks of society.

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Mr. G. W. HEFFORD, late Headmaster of the Rural Secondary School, Knaresborough (now H.M. Inspector of Schools).

*(Evidence given July 7th, 1910.)*

#### KNARESBOROUGH RURAL SECONDARY SCHOOL.

The witness pointed out that the Knaresborough Secondary School was opened less than two years ago, and that the scheme of work was therefore in a more or less incomplete and experimental state.

The school started in 1908 with 38 pupils; by the beginning of the present year (1910) the number had risen to 90, and a further increase of about 40 was expected next year.\* About three fifths of the pupils were boys and two fifths girls. The pupils entered at various ages from 9 to 14. A preparatory department had been formed for the youngest ones. Some pupils came to finish their education at this school, after having attended the Elementary Schools till about 13 or 14 years of age, there being unfortunately an idea that one year at the Secondary School was enough.

The school at present served a radius of 15 miles round. There were already 11 boarders, and if the school was to do its proper work, the boarding element would have to be increased; the district being sparsely populated and travelling difficult.

Most of the pupils who entered at first were not of the kind for which the school was intended. Thus, out of the first 50 children who entered the school, only 6 were farmers' children; but as the purpose of the school was better understood the percentage of this type of pupil rose until nearly 40 per cent. of such pupils were in the school. The school had had to be extremely careful not to hurt the susceptibilities of the farmers, who at first took the attitude that the school was trying to make every boy a farmer. The position that every boy in an agricultural district must intend to be a farmer was of course untenable. The parents themselves often did not know when a boy entered school what occupation he would eventually take up, and it was not desirable to attempt to specialise with such a boy; the school aimed therefore at giving him a reasonable general education, with the prospect of a rural education to follow. It gave him a sufficiently good general education to form a basis for any ordinary occupation; but it did not attempt to train him for a profession or for the university. While, however, the education provided was of a

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\* This expectation was realised.

distinctly general nature, it was given a rural bias throughout, and the witness was of opinion that the school should bear the same relation to an agricultural college as an ordinary Secondary School did to other departments of a University. The course of work comprised English, Arithmetic, History, Geography, Drawing, Science and Nature Study and Gardening, Manual Instruction, and Physical Training, with Cookery, Laundry work, and Housewifery for girls.\*

In reply to a question the witness said that from the point of view of school organisation there would be no difficulty in introducing the teaching of foreign languages, which was not at present included in the curriculum; but he was of opinion that such work would not be suitable for the type of pupil in the school.

#### ENGLISH LANGUAGE AND LITERATURE.

The witness said that great importance was attached to the teaching of English, which consisted of Reading in class, systematic home reading, the revision at school of reading done at home, and Composition. The latter dealt largely with rural subjects, while aiming to get the pupils to express themselves clearly. It was based on things likely to interest the pupils, and very often on a diary which was written every morning. For the latter the pupils were invited to report any event of general or local interest and any event of personal interest. Further, certain boys were told off to report the maximum and minimum temperatures, &c., and the results were entered up and charted.

Literature was studied in all classes through the works of standard authors and the discussion and memorising of suitable specimens of verse and prose. There was definite indication of an increasing interest in Literature on the part of the pupils who were making a much more intelligent use of the school lending library.

#### MATHEMATICS.

Arithmetic was dealt with on simple practical lines, materials, things and quantities likely to enter into the daily life of the pupils being introduced as often as possible. The keeping of accounts arose in connection with the garden plots and the Domestic work. Geometry treated practically found its expression in the production of working drawings for the larger woodwork constructions by the boys, and in pattern cutting and room planning by the girls. The measurement of areas and volumes received careful attention.

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\* An analysis of the time table, showing the amount of time devoted to each subject in each Form, is given in Appendix A. (see p. 117).

## HISTORY AND GEOGRAPHY.

The History was of a fairly general character; but the amount of time usually given to the consideration of wars was largely replaced by land history, with special reference to local history. The older pupils were at present studying the awards given in connection with the enclosure of woods.

Geography was mainly physical, stress being laid on physical conditions affecting agriculture. Practical work in connection with this subject included observations by the pupils both individually and in classes during excursions, of local physical conditions of soil, water supply, and drainage, and a series of simple weather observations was taken and recorded every day.

## SCIENCE.

The first two years of the Science course was very much like the course of an ordinary Science School ruralised; but a good deal of the science of air and water rose quite naturally out of the Nature Study work.

In the fourth year it was hoped that it would be possible to teach just enough elementary analysis to determine such things as water, soluble and insoluble matter, calcium, &c. The school milk, and any the pupils liked to bring, might be analysed every day, and other simple work of this kind might be done.

## NATURE STUDY AND GARDENING.

A considerable amount of time (*see* Appendix A., p. 117) was given by the boys to Nature Study and Gardening, being partly devoted to practical work on the soil, and partly to instruction in methods, writing up records of results, &c. Gardening for girls was on a smaller scale; it included French gardening, herb and floral gardening, greenhouse and frame management, and experimental cutting taking, &c.

The course of Nature Study was intended, so far as the first two years were concerned, to be educational rather than informational, and to lead the pupils to form correct ideas of the life processes of plants. The principles learnt in the laboratory were applied by the boys to the cultivation of their own little garden plots, every boy in the school sharing a plot with another. They kept accounts in diaries of the life history of all the things in their gardens, noting down each development as it occurred, and if the plants did not behave properly they dug them up to find the reason. In addition, the boys carried out simple experimental work, such as, for example, using the same seed with different manures, or potatoes of different sizes or in different states, or setting the same seed in land cultivated in different ways. The witness added, however, that it was not desired to minimise the value of indoor teaching, but rather to increase the value of the outdoor work.

In addition to the Gardening work, on occasional afternoons the older boys went out in the country on Nature Study expeditions, having some definite purpose in view. The time for this was generally taken from time allotted to Nature Study or English, which had its compensation on wet days.

The course did not at present include anything definitely technical; and the witness did not think it desirable that it should do so. The Gardening was, in fact, not more than a legitimate part of the Nature Study, bearing the same relation to that subject as laboratory work did to Science. The witness would not consider it advisable even with the oldest boy to go beyond inculcating the love of growing things, showing him the proper way to grow them, and letting him find out, as far as possible experimentally, that when a thing grew it took something out of the soil. It was practically impossible to teach Agriculture to a boy of 14 or 15 years of age. The idea was to get him into the right habit of mind, to give him the love of the work of cultivation, the joy of seeing something grow, without trying to give him technical ability. It had to be borne in mind that many boys would go straight on to the farm after leaving school and would have no further education. It was desirable therefore to give them the love of doing something well, and of finding out the reasons for things, and to get them into the habit of wanting information and trying to get it; then they might be more ready in after years to take advantage of such aids to agriculturists as were available in the shape of Board of Agriculture leaflets, &c.

#### HANDICRAFT.

At present  $1\frac{1}{2}$  hours a week were devoted to Manual training in the case of the boys; but this would be increased to two hours. The girls did not take this subject. The boys began originally with a course of making dahlia-sticks, potato "sett" boxes, &c.; but now they were working on a fowl run on a large scale. Each boy made a working drawing of the particular piece of work he was engaged upon. The work was adapted for boys of all ages and abilities; it developed their resources and their independence. They had to be much more workman-like in dealing with the several parts of the building than when each boy was making his own small model. The witness was very pleased with the effect of this work on the boys.

Manual instruction was at present taken by a visiting teacher who came to the school three days a week. It was hoped that as the work progressed the instructor would become a regular member of the staff; but at present the school was only feeling its way. It would probably be a good thing to have the same master to take both Drawing and Handicraft; but this was difficult because it was very important to correlate the art with the Nature Study, and it was not easy to find a man who could do



this and was at the same time a sufficiently good joiner to teach the Wood-work.

#### POULTRY KEEPING.

The fowl run, which was being constructed by the Handicraft class, would eventually be tenanted, and the girls would have the duty of looking after the fowls, except for the heavy work which the boys would do. But it was not proposed to give Poultry Keeping a large place in the curriculum. Much of the work in connection with the run would, it was hoped, be done out of school hours; but a certain amount of time would be given, in connection with Nature Study, to recording what went on.\*

#### DOMESTIC SUBJECTS FOR GIRLS.

The witness said that the course of Housecraft, which had been arranged by the Domestic Science Mistress, was based as far as possible on the ordinary occurrences of everyday life. By taking broad lines in all Domestic work the girls became public-spirited and self-reliant, and the work was brought into touch with their homes. Opposition to this work, at first very marked, was rapidly disappearing; but the necessity for hygiene lessons or "talks" had become more marked. Every lesson was based on the principles of Hygiene; but by devoting a separate period to special teaching of the laws of health the class was given a broader outlook in regard to this matter.

With an increase in the number of girl boarders the witness thought that a valuable development of the Domestic work of the school might be secured by placing the girls' hostel under the Domestic Science mistress, and keeping the girls there after the end of their fourth year for a three months' course of practical housekeeping.

A more detailed account of the course of Domestic instruction is given in the Addendum to this summary.

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#### ADDENDUM.

##### STATEMENT OF THE GENERAL SCOPE OF THE DOMESTIC SUBJECTS COURSE AT THE KNARESBOROUGH RURAL SECONDARY SCHOOL.

###### *Housewifery.*

At the outset the girls are led to find out that germs of disease flourish best under conditions of dirt-conditions which are dangerous to the community and the cause of a great waste of energy. Interest is thus aroused in the problem of doing away with dirt and its consequences, and the girls are stimulated to find out for themselves the best way of doing away with it without wasting energy.

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\* Instruction in poultry-keeping now has a definite place in the timetable of the two highest Forms, the amount of time devoted to it being 45 minutes per week.

The same idea is found in the Cookery Scheme: good arrangements and methods of work follow naturally from the First Year's Course.

Simple experiments on the action of heat on foods are carried out, whilst lessons on Heat in the laboratory are fresh in the minds of the pupils. Dietaries and the drawing up of simple menus are studied parallel with lessons on the tissues of the body—their building up and repair, and digestion—in the Hygiene Course.

#### *Laundrywork.*

This work develops naturally out of the cleaning of articles and materials, whilst ironing is a development of the simple "pressing" which is done in the Needlework classes, starting in the Preparatory Form. The Needlework pressing is necessarily graduated, and is a most useful introduction to the lessons in ironing.

#### *Needlework.*

Similar correlation is secured in this subject. From the beginning every garment made is cut from patterns made entirely by the girl responsible for it, from measurements she has herself taken. Very Elementary Anatomy is introduced for this purpose in the Upper Forms. The Course is so arranged that each pattern cut is adapted for use in making the succeeding garment—thus a pinafore with a fitting yoke is used, after further measurement, to cut the pattern of a dressing jacket or similar garment. The girls are encouraged to decorate their garments with some simple embroidery, the design of which is always original. In the Lower Forms this takes the form of plain Needlework stitches done in colour; in this way ability to choose and blend colour is developed. In the Upper Forms stencil designs worked out in the Art Classes are used in conjunction with Needlework. This Course also includes the choice of materials, and is thus worked in with the Laundry Course. Whenever possible the girls buy their own materials, in this way becoming familiar with the cost and difference in quality. All general needlework necessary for the kitchen or laundry is done entirely by the girls. Patching and mending come into the Course naturally.

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Mr. SHADRACH HICKS, Principal of the London County Council  
Shoreditch Technical Institute.

(*Evidence given January 26th, 1912.*)

#### THE SHOREDITCH TECHNICAL INSTITUTE.

The witness stated that the main work of the Institute was connected with evening classes, dealing more or less with craft-work, including simple engineering, electrical engineering, carving, painting and decorating, upholstery, or courses relating to those subjects, and science courses, &c. on the men's side; designing and making of clothing, upholstery, cookery, and such Art work as may be applied to the practical work, &c. on the women's side.

In the day schools there were technical classes, chiefly for boys and girls who had attended Elementary Schools. The boys were prepared to enter a variety of trades associated largely with the wood-working and furniture trades. The girls were prepared to

go into the better class firms dealing with the women's clothing industry. There was also a Domestic Economy school, partially residential, in connection with the Institute. The girls' ages ranged from 14 upwards.

There was also another branch—a branch consisting of about 40 students, who were preparing to become teachers of Handwork in Elementary and other schools. They took a four years' course of training, which included English Language and Literature, Science, and the Practice of Teaching in schools and centres, as well as instruction in various forms of Handicraft.

The number of students in the various branches were—

- Boys' School, 100.
- Girls' Trade School, about 100.
- Domestic Economy School, 45.
- Pupil-Teacher Centre, 40.
- Evening Classes, 700.

#### GIRLS' SCHOOL.

The girls in the Day School were entirely distinct from those in the Domestic Economy School. In the former, the course extended over two years (from 14–16), in the latter over one year only. The Domestic Economy course should be longer and wider in its educational outlook. The girls in some cases showed a good knowledge of Domestic Subjects; varying with the type of home from which they came. The Domestic Economy course was concentrated in a single year. Witness considered that girls were decidedly ready for the instruction at the age of about 14 or 15. A girl of 14 was much more receptive than a boy of the same age. When a girl left the course at 15 she possessed a training which was really useful to her in the home.

A good many went into the Needlework trades and did very well. There were some firms in the West End that would take every girl from one department of the Trade School. The wages they obtained ranged from 8s. to 10s. per week, which was good pay from the trade point of view.

In answer to questions, the witness stated that the girls who live at the Domestic Economy Home were chosen from the Domestic Economy, and not from the Trade School. Every girl in the Domestic School had six weeks' intensive training in residence during the year.

No girl would get a scholarship if the father's income was over 160*l.* per annum. Parents' wages ranged from 23*s.* and 24*s.* a week to 2*l.* 10*s.* a week. As a rule, the girls who attended the schools were girls from working-class homes.

There was not much time for literary teaching in the one year course.

#### BOYS' SCHOOL.

With reference to the boys, the course used to be for two years or for one year, depending upon the age of the boy. Last

year, however, the Council decided that, in future, scholarships should be given to boys of 13 years of age, to cover a three years' course. The course was designed to fit them for a group of trades, mainly woodworking trades. The school was more advanced than the ordinary central school; it was largely a vocational school. Many boys went into small engineering shops and decorative metal-work shops; but the majority went into the woodwork trades, such as cabinet-making, shop-fitting, yacht-fitting, carpentry and joinery, &c. In answer to questions, the witness stated that the technical side of the school was taking the place of apprenticeship. The boys left the school actually ready for the workshop, as intelligent workers or improvers.

The witness stated that it was sometimes difficult to find in a short time situations for the boys that were appropriate to their training; there was some wastage in this respect, though not much. The average wage of a boy was about 10s. a week.

In reply to a question, the witness stated that the technical work was associated, so far as possible, with literary work. For example, History was tinged largely with the history of commerce. There were also regular lessons in English Literature; reading from such books as "Man and his Work," Lamb's Tales, and selections from Ruskin, Tennyson, Browning, and others.

The boys, in general, had not much power of expression. The economy of effort in the matter of language in the East End was very marked. He attached great importance to the literary side of their training.

Boys who have done best during the past four or five years, *i.e.*, those who are now holding the best positions, were those who were strongest in their literary and general subjects when at school.

The witness stated that 10 years ago his school was the only Technical School in London, and it then drew the cream of those who desired that style of training; now, however, he had ceased to get boys of a quality above the average. Ten years ago boys used to enter the school at about 15 years of age; now they entered at 13. During the early period of adolescence (about 15 years of age) there was a steady falling off in the boys' powers of concentration and work. A normal condition, however, soon prevailed.

#### THE PUPIL-TEACHER CENTRE FOR TRAINING TEACHERS OF HANDICRAFT.

The witness considered the training given in this department, where pupils were trained to become teachers of Handicraft was, on the whole, successful. Scholarships were given of the value of 10*l.* 1st year, 15*l.* 2nd year, 30*l.* 3rd year, 40*l.* 4th year, and travelling expenses. Those who left the school would soon be competent to undertake the work of the lower

classes in an Elementary School and could be put in charge of any part of an ordinary school for Manual or Art work. These pupils sometimes began the course at about 14 years of age, but usually at 15 or over. The course of training extended over four years. In the third and fourth years they receive definite instruction and practice in the art of teaching, both at the Institute and in the Handicraft centres of certain selected Elementary Schools. They were then taken into the Council's service as "junior" instructors, at 60*l.* per annum. On reaching 20 years of age, they became "assistant" instructors, at a salary of 80*l.*, rising by 5*l.* per annum to 100*l.* per annum. Only two have so far obtained posts in Secondary Schools. Headmasters were glad to get that type of man into their schools. The pupils who left the Shoreditch Institute could take their place with other teachers. Two have taken the B.Sc. degree in Engineering, and others have matriculated and have taken "intermediate" degree examinations.

In answer to a question the witness stated that they had an opportunity of proceeding to a maximum of 155*l.* as heads of Handicraft centres.

Witness was of the opinion that a great deal more should be done in training a greater number of such teachers. There was not sufficient knowledge among committees and head teachers of the extent of the educational value of teachers so trained.

#### CONCLUSION.

Witness was of opinion that Handicraft should be taught in all forms, from the lowest to the highest.

In the lower forms, up to 11 years of age, both boys and girls should work on materials which could be easily manipulated, such as paper, cardboard, clay, wood, and lead.

In the higher forms additional materials could be used, such as the harder woods and metals, together with a greater variety of tools.

The witness was of opinion that although Handwork should be taught in all classes, special emphasis should be paid to boys and girls who intend to follow some occupation wherein special handicraft knowledge and skill are an advantage.

The instruction should be on disciplinary, constructive, and expressional lines, and should be associated with other subjects.

The witness considered that Housecraft should be taught to all girls. Some parts of the subject should be taken in the LOWER FORMS, such as—

Needlework—the use of scissors, ruler, pencil, compasses, &c. ; and the cutting out of simple forms. This formed an excellent basis for pattern-making for various purposes.

In the MIDDLE FORMS the Needlework instruction should be extended to harder processes, such as the making and mending of garments.

In the HIGHER FORMS (13 to 16 years of age) the instruction should be in the principles and processes of simple cutting-out, and of Laundry-work. Cookery and Laundry-work could be better taken during the last two years at school.

The teaching of Handicraft should not, in the witness's opinion, be deferred till after the close of the Secondary School course. Children acquired the greatest amount of mechanical skill much more readily in their early school years than in later years. He also believed that they retained this skill, more or less, throughout their lives.

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MR. T. W. IRELAND, Headmaster of the Secondary School,  
Mexborough.

*(Evidence given July 7th, 1910.)*

#### THE SECONDARY SCHOOL, MEXBOROUGH.

The witness said that his school was situated in a mining and industrial district. The number of pupils was about 180, of whom about half were boys and half girls. They were for the most part the sons and daughters of professional men, mining officials, and skilled artisans.

#### THE VALUE OF PRACTICAL WORK.

The witness was strongly in favour of practical work being done in Secondary Schools, and had introduced as much of it as possible in his school. He had done this without displacing any of the ordinary school work, there being plenty of time to spare in the earlier years when the practical work was most wanted. The work was only introduced a short time ago when the school moved into its new buildings, and there had not yet been sufficient time to judge of its effect; but the boys were certainly very keen about it, and often continued it out of school hours.

#### HANDWORK FOR BOYS.

In the First Form a certain amount of Cardboard-modelling was done. In the First, Second, and Third Forms, two periods a week were given to Art work, two to Wood-work, and one to Modelling in plasticine. The First Form therefore had six, and the Second and Third Forms five, periods a week of Handwork. The length of a period was three quarters of an hour. All this work was correlated with Mathematics.

The witness believed in setting the pupils to make useful things in the workshop. A great deal of the apparatus for the physical laboratory was made in the school workshop.

The Art, Manual work, and Modelling were all taken by a member of the ordinary staff. The witness considered that this was far better than having a special visiting manual instructor.

The boys dropped Manual work altogether at the end of the second year, *i.e.*, at about 14 years of age. It would be possible to carry it on beyond this, but the witness felt that if it was continued at all it ought to be done in a more specialised way, so that the boys went out competent to enter upon industrial life.

(See later as to specialisation.)

#### HANDWORK FOR GIRLS.

The girls took the Cardboard- and Plasticine-Modelling in the lower forms with the boys; but instead of the Wood-work they did Needlework.

Domestic Economy was started in the third year and continued in the fourth. In these years the girls had a double period (*i.e.*, 1½ hours) of Cookery each week. During the first half of each week the Science Master gave a lesson on the principles underlying the processes that would arise in the following practical Cookery lesson.\* The Science lesson was given either in the Science laboratory or the kitchen, as was found most convenient, and the Cookery mistress was present. Further, during the first two years of the School course the Science Master had in mind the Cookery work which would follow in the later years, and began then to teach many of the underlying principles.

Some Laundry-work was also done in the third year.

#### SCIENCE.

A course of general elementary Science was taken by both boys and girls in the first and second years, and comprised Physics in the first year and Chemistry in the second. Nature Study also was taken through these two years. In the third year the boys took more advanced Physics and the girls went on to Botany. In this year the girls started their Cookery while the boys were doing Mechanics.

#### SPECIALISATION.

The witness said that at present the curriculum of this school after the age of 14 was arranged to prepare for the professions, and not to train for the industrial needs of the

\* Thus, altogether three periods per week were given to the subject— one to the theory lesson and two for the succeeding practical lesson. Since this evidence was given, however, the Domestic work has been developed, and now receives six periods a week; moreover a Domestic mistress has been appointed who is capable of giving lessons in the scientific principles underlying the processes.

district. Consequently a great many pupils left at 14 because the curriculum was not suitable for them.

The problem was to find something which would keep them at school, and the witness was strongly of opinion that the school should do more to train boys for industrial life and girls for Domestic work. He hoped that it would be possible eventually to divide the school into sides, viz., a professional side, a commercial side for boys and girls, an industrial side for boys, and a domestic side for girls. In the professional side the present curriculum would be continued, but in the other sides certain subjects would be dropped, and a thorough course of commercial, industrial, and domestic training introduced.

It was not proposed to drop the main subjects of a general education, but rather to introduce the special subjects with the object of keeping the pupils at school and preparing them for their intended careers. This would have the further great advantage of providing an opportunity of improving the general education of the pupils, as the work of the school in such essential subjects as English and Mathematics could be made the same for all.

The bulk of those who stayed beyond 14 were trying to enter the teaching profession. For the others it was desirable that the curriculum should be specialised as much as possible with a view to their future vocation. The parents were very strong and would not keep their sons and daughters at school unless they felt that they were learning something that would be of practical use to them.

Mr. L. M. JONES, Headmaster of the Central Secondary School,  
Birmingham.

*(Evidence given September 30th, 1909.)*

THE CENTRAL SECONDARY SCHOOL, BIRMINGHAM.

The witness stated that his school was situated in the centre of Birmingham, and was under the Local Education Authority. It had 287 pupils (all boys), whose ages were from about 11 to 17½. The course normally lasted for four years, but there were always some students in classes below, and some in classes above, the course proper. Originally the school was part of the Municipal Technical School, being known as the Day Technical School. It was still housed in the buildings of the large Municipal School, but it had become Secondary in type. It gave an education which was non-classical in character, and which it was hoped would be suited to boys intending to enter the various professions. The education was general, and at the same time had a scientific bias. Two-thirds of the pupils came from the Public Elementary Schools.



Some came from private schools, preparatory, or grammar schools. Transfers from other Secondary Schools, however, were discouraged, because it was not considered a good thing for a boy to change his school. They did change for various reasons—sometimes because they were not making good progress at their old school, and sometimes because the course at the Municipal Secondary School was better suited to their after-life. It must be remembered that the course at this school started at a later age than other schools, so that some boys were placed in other schools with the intention that they should pass to the Municipal School when old enough.

In the last two years of the school course a division was made into an Engineering Side and a Chemical Side. There was no Commercial Side, but there was room in the city for a school with a strong commercial course.

Most of the boys leaving the Engineering Side became unpremiered apprentices in engineering works, and, later, artisan engineers, assistant managers, &c.

Boys leaving the Chemical Side entered chemical works as junior chemists, or entered the laboratories of analytical chemists. Many from both sides started work with parents or relatives—small manufacturers—of which there were a very large number in Birmingham, whilst many also became clerks.

Neither side was designed as a preparation for any particular examination; but the sixth form boys could take the Matriculation Examination (and also the London Intermediate Science). Some boys did take these examinations; but they were not sent in for them unless they required to pass the examination for some further purpose. About four students went to the Birmingham University each year, and about the same number took the London Matriculation. One or two boys yearly would take the London or Birmingham Intermediate Science.

#### MANUAL INSTRUCTION.

Throughout the whole course all pupils did Manual work. For the first two years (omitting a preparatory department) they had about  $1\frac{1}{4}$  hours a week in which they did either Wood- or Iron-work, having one year at each. Wood-work did not necessarily come first. A large number of the pupils had already done Wood-work in the Elementary Schools, and those who had done a fair amount of it took Iron-work first and in the second year went back to Wood-work of a more advanced kind.

Probably about half the boys had done no Manual work before entering the school. These boys were at some disadvantage with the other boys, but not much, for very young boys had not really the strength to do Manual work. It was not found that the boys' capacity in this subject was much affected by the work they had done before coming to the school. This was partly due to the fact that the work they had done before differed in kind from the work done in the school.

At the end of the two years, a certain amount of division was made as between engineering and chemical students. In the engineering department the pupils took Iron-work for the next two years, giving about  $1\frac{3}{4}$  hours a week, but during this time they also had a six months' course of Wood-work of the nature of pattern-making, and applied to their after-life.

Students not destined for the engineering profession took the chemical side. Here they had a further year of Wood-work of a lighter type than that done by the engineering students, and their fourth year was spent in the workshop on instrument-making—partly in iron, partly in brass, and partly in wood. In this year they started by making simple things in brass, but afterwards sometimes made dynamos, induction coils, galvanometers, &c.

The witness did not think the Iron-work done in the school was too heavy for the boys. Some of it looked hard, but it was not such as to hurt a boy. There was always an atmosphere of hard work in a workshop. The instrument-making followed the Iron-work, because it required knowledge and skill which were acquired in the earlier course.

The Secondary School used the workshops of the Municipal Technical School. There was a very fine room for Metal-work, which formed an important branch of the Technical School. The carpentry shop was not better than was to be found in many other Secondary Schools.

#### SCIENCE.

As regards Science, both Chemistry and Physics were taught, and about equal stress was laid upon each. In the first year,  $2\frac{3}{4}$  hours a week were given to Physics and 3 hours to Chemistry.

It was preferable that Chemistry and Physics should be taught by the same teacher, but it was still more important that the Physics master should also teach Mathematics.

No practical work was done in the Physics laboratory in the way of making apparatus. The witness was not anxious for too much correlation between the Physics and the Wood-work. There was a danger that pieces of apparatus would be made because they were wanted in the laboratory and not because they provided a good exercise; thus the Manual instruction might come to be used as a cheap way of getting apparatus. Instrument-making was done in the later part of the Handwork course, but not for a utilitarian purpose. If a boy wanted to make something for himself he was allowed to do it, so long as it was of a suitable kind.

#### THE EDUCATIONAL VALUE OF HANDWORK.

The witness said that he would be sorry to do away with Manual work in any part of his school. He believed in taking it right through the school from the beginning. With small

boys the work was a great relaxation from their other studies, and gave them a certain amount of liking for school work generally. There was, moreover, no subject in which a boy saw at such an early age the necessity for accuracy. He could see for himself the results of accuracy. This made the work of great educational value, perhaps more especially in the Iron-work, because there the faults could not be hidden.

Manual work was also of special value to the boy who was good at that kind of work but not at other things. Especially for the boy getting near the top of the school it was good that he should be better than others in something.

It was not easy to give an opinion as to whether boys dull at bookwork were generally clever at Handcraft. Undoubtedly some boys who were not at all bright in ordinary school work were really good in Manual work, and, in fact, one of the best boys at present in the workshop of the witness's school was somewhat dull in other branches of school work, and would have great difficulty in getting through matriculation. Some boys of this kind became very keen about Manual work, and did exceedingly well at it. And this undoubtedly affected their school work, because having once excelled in one direction, they did not like falling behind in others. In the witness's school the boys produced school plays, and for this they made all their own materials, properties, &c. It was usually found that if a boy really shone in these plays, his success was reflected in his work afterwards; he was not content to take a back place in school work. The same thing was noticed in sports, and also in Manual work.

The witness believed that, even in a Secondary School of a more general type than his own, it was advisable that Handwork should enter into the curriculum, because of its value in education and also because of its value to a boy in after-life. Whatever industry a boy entered, he would at least derive a great deal more pleasure from his home if he could do things in it himself. Its effect as a training in accuracy was also so great that it should be included in every course.

#### TEACHERS OF HANDWORK.

The witness said that his school was rather fortunate in its teachers of Handwork, because it had the use of the staff on the strong departments in wood and wood and iron attached to the technical school. So far as the secondary school was concerned these men were in the nature of visiting teachers, but they were permanently members of the technical school staff. To a certain extent the close connection between the two schools tended to make the handwork teachers a corporate part of the secondary school staff, but not quite to the extent desirable. It was certainly a good thing to have these teachers as part of the ordinary staff.

Probably in a good many secondary schools there was a difficulty in getting men who could teach Handwork in the right kind of way. This trouble had not arisen in the witness's school. With the exception of one assistant in manual instruction, all the Handwork teachers in the school had been trained for the teaching of their subject. The head of the woodwork department had been a carpenter, but he took up the study of woodwork as a subject of education, and obtained the City and Guilds Certificate. The head of the engineering department had been trained for the engineering department, but afterwards took up teaching as a profession. Both were excellent teachers, with a real interest in education.

There were signs that teachers were becoming more keen in regard to manual work. A good many visits were paid to the witness's school by masters in the Midlands anxious to introduce the subject into their schools.

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Mr. W. A. KNIGHT, Headmaster of Sexey's School, Bruton.

*(Evidence given November 15th, 1911.)*

#### SEXEY'S SCHOOL, BRUTON.

In answer to questions, witness said that the total number of pupils in his school was 140, of whom about 50 were boarders, while many came into the town daily from the neighbouring country by bicycle, train, &c. About 40 or 50 per cent. of the boys in the school were sons of farmers and tradesmen, a good many were sons of better-class artizans, some were sons of professional men, and a number were sons of schoolmasters.

#### THE NEED FOR MANUAL INSTRUCTION.

The witness was of opinion that provision should be made for regular instruction in Handcraft as part of the ordinary course of boys in Secondary Schools; but that at about the age of 15 or 16 it should be possible for a boy to specialise in the direction of his probable future career, and to omit Handcraft in favour of more literary work, Science or Mathematics, at the discretion of the headmaster.

#### SUGGESTED COURSE OF HANDWORK.

The witness suggested that during the first two years, that is, up to about 12 or 13 years of age, the Manual Instruction should consist of Cardboard-work; during the next two years (*i.e.*, up to 14 or 15) of Wood-work; during the next two (*i.e.*, up to 16 or 17) of Metal-work. He thought it desirable that during each of

these six years a period of  $2\frac{1}{2}$  to 3 hours a week should be given to the work.\*

(a) *Cardboard-work.*

The Cardboard-work was done in the ordinary class-room and at the ordinary desk, the latter being protected by pads of millboard. The operations involved in this work were adapted to the strength of the young boy, and the work was simplified by dealing with a material of which they had only to consider two dimensions—length and breadth. A good course of cardboard work would occupy two years.

(b) *Wood-work.*

In Wood-work the boys left their class-rooms for the specially equipped workshop. The witness believed that the mistake was often made of beginning Wood-work at too early an age, when the boys were physically unequal to the muscular exertion involved. There was considerable difference of opinion as to the form Wood-work should take—as to the relative advantages of Sloyd work on the one hand and the English system of joints on the other. The witness's own experience was that it was possible to evolve a scheme embodying the good points of both. In his course the knife was used in a few models; but for the most part the work was done with the ordinary carpentry tools.

The light Wood-work done in some schools was no doubt useful; but it was not so valuable as a workshop course, which provided valuable training in discipline and in keeping tools tidy and sharp and in good condition.

(c) *Metal-work.*

Metal-work was quite as valuable as Wood-work and entailed an even greater degree of accuracy. The one was the natural supplement to the other; for it was very difficult to produce good work in metal without a preliminary training in the use of woodwork tools. A mistake often made in Metal-work was to keep boys too long at mechanical operations, such as chipping and filing, and so to deprive the work of its interest.

#### HANDWORK IN THE ELEMENTARY SCHOOLS.

If the Handcraft was taken right from the beginning of the Secondary School course, some difficulty might arise in connection with the boys coming in from the Elementary Schools at 12 or 13 years of age. Such boys were not so well equipped to commence Wood-work as were the boys who had been doing

\* Suggestions for a complete course on these lines are contained in a series of articles contributed by the witness to the "School World," December 1905, March 1906, April 1906.

Cardboard-work in the Secondary School, but in most places now these boys would have done some kind of Manual Instruction in the Elementary Schools; in Somerset the Elementary Schools were giving an increasing amount of attention to the work.

#### THE AIMS OF MANUAL INSTRUCTION.

The work should be educational in its aims. Considerations of utility should be subordinated to educational development; no attempt should be made to turn out carpenters or engineers. Knowledge of processes and tools, the manipulation of material, the development of the power of co-ordinating brain, eye and hand should be guiding principles. These should be the aims rather than the making of certain models. The models should be regarded not as the end but as only the means. Whatever career a boy might enter later on, he would be benefited by a course of this kind. If he did not become a maker he would be a user, and as such it was important that he should know good work when he saw it.

#### CHARACTER OF THE TEACHING.

The materials and tools used should be adapted to the age and strength of the pupils. The various manipulations should be carefully graded in order of difficulty, and, as in all school work, the difficulties should be introduced one at a time. This latter point the witness regarded as a fundamental axiom of all education; and he had heard with surprise a proposal that one should not trouble in Handwork to introduce difficulties one at a time; he did not see how that proposition could be substantiated.

The course should be interesting and afford sufficient variety. If this were done the boys liked it; though they found after the first novelty had worn off that they had to display the same industry here as elsewhere. On the other hand, the same regard should be paid to orderly habits, discipline and morality as in other lessons.

The subject should not be treated as a mere recreation; but should form an integral part of the curriculum. In many schools there was a tendency to assign the Manual Instruction to out of school hours and to put a carpenter in charge of the class and let him do as he liked; often resulting in more harm than good.

Occasional lessons should be introduced on the construction and use of tools and the properties of materials. The metre and its sub-divisions could be used with great advantage, French and English measurements being used, for example, in alternate models. All the work should be based on accurate drawings.

The finished work should be the sole production of the pupil and might well become his property, provided a certain

standard of perfection was reached. It was most desirable that the teacher should not do any of the work that was to be labelled with the boy's name; this touched on an important question of morality. It was quite easy for the teacher to illustrate his points on other material.

In answer to a question, witness said that no definite opportunities were given in the time-table of his school for original work on the part of the pupils; but it was found that towards the end of each section of the work the boys were able to suggest new models. It was also found useful to let them work out dimensions. As to the correlation of Handwork with Science, some of the physics apparatus was made as a matter of course in the workshop; but the witness thought it was not advisable to depart from the syllabus in order to make any apparatus that happened to be required in the laboratory. The boys were, however, encouraged to do things of this sort out of school hours.

The witness said that the most convenient and most economical way of teaching the subject was the class method, all the pupils working through the course together. He did not believe in the system of individual teaching sometimes advocated, because this meant repeating the same instruction to every boy in the class, and with 20 boys in a class this was a great waste of time. Those boys who worked more rapidly than the others need not mark time; they could be given supplementary models, or could help the teacher to prepare for the next lesson, and so enable the slower boys to get a little extra attention. Moreover, no harm was done if the slower boys did not always finish their work.

#### INFLUENCE OF HANDWORK ON PARTICULAR TYPES OF BOY.

There was no doubt that the Handwork had more influence on some types of boy than on others. It would, however, be quite wrong to excuse the clumsy boy from Manual Instruction on the grounds that his fingers were not deft enough. That was an additional reason for giving him this work to do. In some cases it was noticed that boys quicker at other subjects were not so good at the Handwork, and the converse was also sometimes observed; but as a rule the boy who showed most intelligence in his other studies was also best here. At the same time it was important to remember that cases were met with, especially in rural districts, of boys who—in more bookish subjects slow of speech and apparently almost dull—found in this work an opportunity of distinguishing themselves; the encouragement which this afforded them was of great value in the development of their character.

The witness had also observed cases of boys who, though not clumsy, were chiefly interested in abstract studies, and were rather bored by Manual work. Such boys were not excused the

lower part of the Manual course, and he thought their lack of interest gradually disappeared; but they had the opportunity at about 15 of omitting the Manual work in favour of more literary work.

In answer to a question, the witness said that although it might be desirable to increase the time spent on Manual work, in the case of boys with little aptitude for literary subjects, to do so would involve such great difficulties of organisation as to render such a plan impracticable.

#### TEACHERS OF HANDCRAFT.

The teaching staff of the witness's school consisted of seven teachers besides himself. The Manual instructor was a full-time member of the staff, who had had a special training in Handcraft. He had full charge of all the Handcraft in the school; but in certain cases he received assistance from one of the other teachers, and he was helped by a visiting teacher in Metal-work. He was in full sympathy with the rest of the work of the school, and had equal status with the other members of the staff. In addition to the Manual work, he had charge of all the Physical Exercises, and the Drawing, and also took a little Arithmetic.

Teachers of Handcraft should be specially trained, and should have a high respect for the work. At present the opportunities for such training were very inadequate, and it was difficult to secure the right man. The witness had been much struck by the excellence of the training given at the Shoreditch Technical Institute. It was very thorough, and the teachers turned out were extremely enthusiastic in the work and very particular in their choice of methods.

The witness would see no objection to the Handwork being taken by the Science master if he were capable of doing it; that would be better than having a man brought in from outside, and would secure the due correlation of Science and Handwork. He had himself, however, never been able to find a Science master either qualified or willing to do the work.

#### SCIENCE.

The witness said that his experience led him to think that it was better not to introduce Applied Science into a Secondary School, even in a rural district. He did, however, think that, in teaching Pure Science, illustrations might be used in suitable places to show the practical application of the principles dealt with. A much better effect was produced by aiming at the principles and adding the illustrations than by subordinating the principles to the practical application. Further, it must not be assumed that the farmers' sons would necessarily be farmers; many of them became bank clerks. While therefore it was desirable to illustrate the teaching from farm life, the



main object should be to give a good foundation in Pure Science upon which a knowledge of its application could be built afterwards.

### ADDENDA TO MR. KNIGHT'S EVIDENCE.

In addition to his oral evidence, Mr. Knight submitted the following Memoranda in writing:—

#### *Addendum A.*

##### SPECIAL DIFFICULTIES IN RURAL SCHOOLS.

1. *Time.*—The curriculum is already overcrowded. I venture to suggest the desirability of omitting Classics altogether, depending upon English and one Modern Language for the necessary literary training, or at any rate deferring Classics until a comparatively late age.

2. *Staff.*—Conditions of Service. Before any real improvement in educational efficiency can be made, improved conditions are urgently required in respect of Salaries, Tenure, Pensions and Hours of duty of Assistant Masters, and the salaries of Headmasters should depend to a less extent on Capitation Fees.

3. *Examinations.*—The present system of external examinations exerts an unhealthy and undue influence on the curricula of the schools, and requires simplification and control. Any boy of average industry and ability after a Secondary School Course should be able to enter on specialised training at any University or in preparation for any profession. Some at least of the Open Scholarships at the Universities should be awarded on a greater range of subjects, so that over-specialisation in the top Forms of the schools may be avoided.

#### *Addendum B.*

##### INSTRUCTION IN HOUSECRAFT IN RURAL SECONDARY SCHOOLS FOR GIRLS.

(i) Courses of Housecraft should form part of the education of girls in Secondary Schools during the *main* part of school life, but at the age of about 16 a girl might be allowed to specialise (at the discretion of the Headmistress) with a view to her future career.

(ii) Housecraft should not be deferred till late in school-life, because—

- (1) The period of school-life is at present deplorably short.\*
- (2) Manipulative skill is best developed before the age of 15.

(iii) If Housecraft be deferred till after the close of the Secondary School career, the conditions in rural districts are such that it would be omitted altogether.

\* In a typical rural Girls' School in Somerset, during the period 1900-10, of the girls admitted—

40	per cent.	remained 1 year or less.
25	"	" 1-2 years.
17	"	" 2-3 "
10	"	" 3-4 "
8	"	" 4-5 "

Dr. J. D. McCLEURE, LL.D., D.Mus., Headmaster of  
Mill Hill School.

*(Evidence given June 5th, 1912.)*

The witness began by emphasising the wide meaning attached to the word "Practical." He considered that such subjects as Chemistry and Physics ought to be taught by means of practical work. At the Mill Hill School, where a junior class took Botany, the boys were encouraged to collect specimens, &c. But there was no provision for Manual work in its restricted sense in the Time Table. There was, of course, a carpenter's shop, but Carpentry did not enter into the curriculum in any form or manner; it was a purely voluntary subject. The shop was used generally in the interval between morning and afternoon school, and in the summer months it was sometimes used after afternoon school, while there was no restriction as to the boys who should go so long as they went for definite work and not for amusement. Carpentry was not recognised as an alternative to games. If, however, a boy was physically incapable of playing games he was drafted off to the carpenter's shop or provided for in some similar way in order to prevent "loafing." Pressure was brought to bear on such boys, who numbered not more than 5, or at most, 10 per cent. There was an annual prize for Carpentry which established keen competition.

The Carpentry work was more recreational than educative in character, and had no bearing on the school curriculum. The boys made something and enjoyed the making of it. In the process they were taught how to use tools. There was no other Manual work done at the School, and witness did not see how it was possible to do more. Thus about 70 or 80 per cent. of the boys did no Manual work.

The Carpentry instructor at present was a working carpenter and was not a trained teacher.

In answer to questions, the witness stated that, while he would not object to the introduction of some Manual work into the school curriculum, he did not think the upper part of the school would be a desirable field for this subject, except on the modern side where boys were training for the engineering profession. If Manual training was to form part of the curriculum then some other subject must be given up. The whole question seemed to resolve itself into what might be called the object of the school. If boys were kept till the University age then presumably the object was to train them for the Universities; if, on the other hand, the boys leave about 15 or 16, then the curriculum should be organised on entirely different lines. For instance, Greek would not perhaps be taught at all, and much more time would be devoted to Practical Science, Modern Languages, &c.

He did not think much time would be saved in correlating practical with other work.

The ultimate aim of the school had an important bearing on the curriculum. If the boys were leaving at about 17, if the school was non-local in character, obviously its curriculum must be different in character from a local one which was designed to supply a local need.

### THE QUESTION OF BACKWARD BOYS.

In answer to questions, witness said that the number of dull boys at the school was not large; if there were a large number he would adopt quite a different attitude. In that case he would look out for a qualified teacher of Manual work and would correlate the subject with other branches of school work, for he considered that work with their hands brought out the faculties of boys who were dull at book subjects.

There were some boys who would never make any progress in their mathematical or scientific studies so long as they were restricted to books. Somehow or other their work in the manufacture of various articles quickened their appreciation—and their intelligent appreciation—of such subjects as Mathematics and Physics. He did not, however, think that every boy would benefit by Manual work. For instance, one of the cleverest boys he knew tried to learn the violin: and after three years' work knew very little more about it than when he began. Some boys could make nothing of tools. Witness instanced the case of quite a clever boy who was hopeless in the Chemistry laboratory. This boy showed talent in Mathematics, Languages, &c., and he was good at Science on paper. His talent did not lie in his fingers and he would never have succeeded at Manual work. To sum up, there were two minorities—those who would never gain by Manual work and those who would gain more by Manual work than in any other way.

In reply to further questions, the witness said that some boys never really understood what they were doing until practical work showed them the common sense of their book studies. His opinion was that practical work threw a light on the theoretical work. An "old boy" who was farming in British Columbia had asked that boys should be sent to him first and attend an agricultural course at a college after. Then they were in a position to know what they required. That principle applied all round. Every normal boy should do Handicraft work.

There were some abnormally retarded boys at the school and they were encouraged to enter the workshop. The dullest boy he ever knew came out on one occasion third in the History examination. The reason was that two lessons had been given on the battle of Waterloo and the drawing of the plan of the battle appealed to the boy so much that he wrote a perfect account of the battle.

## LIGHT HANDWORK.

Witness agreed with the use of cut paper, cardboard, &c., in the junior forms, which, he thought, enabled the younger children to gain ideas of Geometry. He believed small boys had constructive ability. There were two things that most schools allowed to run to waste in children, viz., their constructive ability and their marvellous powers of observation. It was on account of the latter that he included the teaching of Botany. As to Practical Geometry, he thought most boys got tired of it; there was not sufficient work in it to satisfy their mental cravings. Such work was more fitted for the earlier years, except for boys who were marked out for engineering.

## EDUCATION FOR ENGINEERING.

In their case practical work was necessary, not so much because they were going to earn their living with their hands, but in order that they might have the knowledge of the processes necessary, and also that the practical work might make them understand the need for the theoretical subjects. There was no desire on the part of some engineers that boys should have had some expert practical instruction in engineering subjects. It was necessary that those boys should have a competent knowledge of Mathematics; a sound knowledge of one Modern Language, at any rate; English should also be a subject, and for the rest Physics and Chemistry were on the whole quite the best science subjects to take; Drawing should also be developed. Those boys at Mill Hill School who were preparing to become engineers were being educated on these lines. Actual Manual work besides this was not being insisted upon or desired.

## DIFFICULTIES IN REGARD TO THE TIME-TABLE.

Witness thought it was possible to do more Manual work than was being done at present. The difficulty in schools of the type with which he was acquainted was that boys of all ages from 11-19 had to be catered for, which meant that the same space of time per lesson must be allowed, and this, of course, was undesirable. For instance, a boy of 17 could, with profit, spend more time at one lesson than a younger boy. In practical work one had the choice of a small class with a relatively short time, or a large class with a long time, some of which would probably be wasted for many of the members.

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Dr. T. PERCY NUNN, Vice-Principal of the London University  
Day Training College.

(Evidence given November 10th, 1909.)

THE LONDON DAY TRAINING COLLEGE.

(a) *The Students.*

The witness stated that this College was under the control of the London County Council. With very few individual exceptions all the students came from London schools—practically always from Secondary Schools. The County Council paid the fees of all ordinary students.

The majority of them on leaving found posts in Elementary Schools, but some went to Secondary Schools.

There was no entrance examination to the College. All of the students had either matriculated or passed the Intermediate examination in Arts or Science at school. The witness was in favour of their taking the Intermediate in school. No doubt it was misleading that an examination taken in school should have a name suggesting a stage in a university course; but it was, as a matter of fact, a school examination in content, and it would be better to call it a school examination: It represented the stage of knowledge at which it was desirable for a student to start a college course.

(b) *General character of the Course.*

The course lasted for three years. Every student was a member of the University of London, and took in addition to the professional training course an undergraduate course, terminating with a degree in Arts, Science, or Economics. Students who on coming to the College had merely matriculated took a three years' course at the University concurrently with a three years' course of training. Those who had passed the Intermediate examination spent the first two years almost entirely at the University, taking the final course for the degree, and during that time spent only one half-day a week at the Training College. Then, having sat for the degree examination, they spent a whole year upon professional training. The great bulk of these students were able to secure the degree after two years. It had been the custom for the women in nearly every case to take the B.A., while almost all the men took the B.Sc.; but happily this condition was passing away. The B.Sc. was too exclusively scientific for an Elementary School teacher, and the students were therefore being urged to take the mixed course, which was fundamentally literary but included one Science subject. This was preferable to a course entirely confined to Arts. If a student did take a purely Arts degree the College supplemented it by means of Nature Study in the Training College course.

When teachers in training for Elementary Schools took a degree course there was certainly some danger that the professional side of their work might suffer. But in the case of the London Day Training College this did not happen, because strong measures were taken to emphasise the professional work.

It was, however, desirable to push on to a time in which the academic work of all students would be completed before the serious professional work commenced. This part of their work would then be considerably more efficient. In this connection, the witness remarked that the standard of the pass degree examinations in London University was abnormally high, out of proportion to the pass degrees of Oxford and Cambridge, for example. The effect was serious, and it would be a great advantage to remove the idea that London must keep up this high standard of examination in the case of its internal students. It was not the character of the courses of instruction that was at fault, but too much stress was laid upon the examination which followed it. This was no doubt an inheritance from the time when the University was solely an examining Body.

In answer to a question, witness said there was a tendency for the women students to be overworked. This was due to their excessive conscientiousness. A man finding himself overworked would take his work more easily; but a woman refused to give way.

### (c) *The Handwork Element.*

Every student in the Training College took a course of practical work covering two years. During the first year all took a preliminary course in Clay-modelling. In the second year it was necessary to make a distinction between the men and the women. The latter took Needlework and the former Wood-work.

#### (i) *Wood-work.*

There was in the college a workshop of a simple character. The course hitherto taken was regarded as not entirely satisfactory, and experiments were being made with a view to getting nearer to a more desirable state of affairs. It was thought that eventually the best kind of course would be one which bore directly on the application of Manual work in the various subjects of school instruction. Accordingly the College was dispensing more completely every year with the models generally introduced into the Manual Instruction course, which were justified by the connection of this class of work with the crafts rather than with school instruction, and in their place models were being sought which had a definite use in school work. Thus, teachers of Geography were recommended to illustrate their lessons by such means as sundials made from very simple materials in class; and it was found a very profitable exercise in the manual workroom for students to devise

simple forms of apparatus of this kind. Again, for use in elementary Geometry simple surveying apparatus could be made by the students. The teacher who had gone through such a course should be able in the lower standards to teach these constructions, and in the case of the higher standards to bring about effective correlation between the class-work and the work of the Manual training centre.

Unfortunately, however, the course which was considered ideal could not at present be carried out. It would only be feasible when the students came to the College properly prepared, and at present a very small number of them had had the kind of course it was desirable they should have. If they had a good course of Handwork at school it would be possible in the College to dispense with everything except the professional side of the work.

(ii) *Needlework.*

Every woman student in the Training College was obliged to take Needlework. The problem of providing a suitable course was difficult because the course could not be based upon the present practice of the schools which is in many ways unsatisfactory. A partial remedy would be to apply the same principles to Needlework as to other forms of Manual Instruction, and to bring about a fusion between Mathematics, Drawing and Dressmaking. There were, however, great difficulties in the way of rationalising the teaching of Needlework in schools. It was the one subject the headmistress regarded as sacred, and as a rule she would not allow the Training College to interfere with it. The witness was convinced that in most cases the whole spirit of the teaching of the subject in schools was wrong. What was needed was to bring into the students' work, and through them into the children's, much more of the genuine constructive element.

(iii) *Domestic work.*

No training in the teaching of "Domestic Subjects" (*i.e.*, Cookery, Laundry-work, &c.) was given in the College, and at present there were no facilities for teaching these subjects in the College Demonstration Schools. The children were sent for such instruction to the ordinary centres. On the other hand, systematic efforts were made to correlate the lessons in Science and Mathematics with the Domestic Subjects and to show the students how to teach the former subjects from the point of view of their relevance to domestic life and duties.

#### HANDWORK IN SCHOOLS.

(a) *The General Position.*

Almost all the students of the London Day Training College had attended Elementary Schools before going to Secondary Schools; but they had generally left the Elementary School

before reaching the stage at which they would have attended Manual Instruction centres. In the London Secondary Schools all the boys had some Wood-work, but it was usually abandoned some time before the sixth form was reached, because it interfered with work for examinations. From the point of view of the Training College it was not, however, vitally necessary that systematic Manual work should be done between 15 and 18. What was very important was that at the earlier age this type of instruction should be on much better lines. The instruction now given was too abstract in the sense that too much attention was given to technique, not really relevant to tasks the boys could profitably undertake. The making of difficult joints, for instance, was relevant to a class of Handwork that should be regarded as outside the range of the ordinary school. Technical details were of great importance to cabinet makers, but not to the stage of Handcraft represented by a boy in a Secondary School. It would be much better to teach simpler principles of construction such as those exemplified in earlier stages of the wood-working craft. For such work the tools required were simple. For example, planing, a technical exercise of great difficulty, and relevant to a higher stage of technical development than could reasonably be expected in a Secondary School, might easily be dispensed with, and for the plane might largely be substituted the spokeshave, a tool much more suitable for a boy.

The curriculum beginning in the Elementary and continuing in the Secondary School should recognise that Manual work followed along two lines, and should keep these two lines distinct, namely:—

- (1) "Pure constructive work," which could be regarded as aiming at the development of the spontaneity, aesthetic perception and skill which are suggested by the term craftsmanship. The development should be carried far enough to produce in the pupil a sense of the importance of the crafts as an element in contemporary human life and in the history of civilisation.
- (2) Constructive work as an important factor in most of the other subjects of the curriculum.

(b) *The Demonstration School of the London Day Training College.*

The London Day Training College now possessed two Demonstration Schools, but had up to that time been responsible for the curriculum in only one of them. This was a non-provided Elementary School, containing about 150 boys and 150 girls. The introduction of practical work throughout the school and in all suitable subjects had been of great advantage, and the witness believed it was most important to introduce it similarly into all schools. The school possessed a laboratory,



but this was not essential ; any classroom that was equipped with tables or with desks whose tops could be made horizontal would suffice.

In the earlier stages of the Handwork course the girls were doing work practically identical with that of the boys ; but it was recognised throughout that girls had special interests that boys had not. The articles made were of a useful kind, such as sandwich cases for the pupils' daily use. The pupils were being taught to weave these cases by means of a simple loom, and were able to create patterns for themselves. Last year the boys and girls collaborated in making reins with which to play games. Work of this kind should be regarded as belonging to the first of the two types of constructive work, since it was clearly connected with the development of craftsmanship in the sense in which the witness had defined this word.

In addition to this "pure constructive work" there was the constructive work which was incidental to the intellectual subjects. Science, for instance, took at an early stage the form of Nature Study, and in Nature Study it was quite easy to introduce a number of constructive exercises. Gardens were made out of chocolate boxes, strengthened to hold mould and painted by the pupils ; sweet peas were sown, and when they came up, a simple trellis was made to hold them. The children doing this work were between 8 and 9. A little later geographical models were made ; and later still came the stage of instruction in Science, in the ordinary sense of the term. In the witness' opinion the value of Science teaching depended largely upon its reproducing, as far as possible, the natural conditions of growth of scientific activity outside the school. This conception of the subject implied not only the introduction of much constructional and manipulative work, but also the closest possible relations between this work and the intellectual elements of the study ; the functions of the laboratory and manual workshop should here be so closely allied as to be almost indistinguishable.

Until the end of Standard IV. the girls continued their Nature Study. In Standard V. the course contained a sufficient study of Plant Physiology and Hygiene to form a useful basis for the subsequent work with its definitely domestic point of view. In Standards VI. and VII. they pursued a course of Physics and Chemistry based entirely on domestic material and including an experimental study of the work of "germs." The course ended with a term's work on the care of infants, in which opportunity was taken to show the hygienic and other practical applications of the girls' earlier studies. At the age of 12 the girls went to a Cookery centre. A much closer connection between the work of the centre and that of the school was desirable so as to make the work an organic whole ; but at present administrative difficulties were in the way.

*(c) Domestic Subjects for Girls.*

The witness was strongly of opinion that it would be better to postpone Domestic Subjects until a short time before the leaving age. Certainly education was more valuable according as it was more specific; but the specific turn was dangerous as well as ineffectual if it came too early. Girls' attention should be directed to these subjects about the time their minds began to turn to the serious things of life. Instruction must wait upon the development of interest, and it was useless to attempt to force premature development. If a girl was to leave school at 18, Domestic instruction should be postponed till 15 or 16. In the Elementary School owing to the lower leaving age, Domestic work must start at an earlier age.

The curriculum for ages between 15 and 18 should contain a course of Science in which domestic problems formed the starting point for the scientific inquiries. Similarly in the case of boys problems of industry, engineering, &c. should form the starting point for scientific instruction. It was difficult to lay down any order in which the various Domestic Subjects should be taken; but roughly it might be said that the physical aspect should come before the chemical, and that special attention should be given to Hygiene in the later stage.

As the witness had already stated, the chief difficulty of the present situation was the lack of unity between the work in Domestic Subjects and the classroom or laboratory instruction in Science. This unity was necessarily more difficult to secure in Elementary Schools where the girls went for Domestic Subjects to a separate centre. The idea would be to bring all the domestic work into the school and have it taught either by the teachers of Science or by teachers in close touch with them. In the meantime it might be useful to introduce small gas stoves into the laboratory—one being provided for each pair of girls—and to make simple investigations in cookery the subject of a section of the Science lessons.

*(d) Handwork in the Lower Classes.*

It was now widely recognised that Manual work should come into the lower standards of the Elementary School between the age of eight and the time of going to the Manual centre. A supplementary course of a temporary character was being taken at the College, in which it was endeavoured to show teachers how to bridge the present unhappy gap between the ages. They were also able to study the experiments made in the demonstration school in bringing Manual work into relation with Nature Study and other subjects.

This supplementary course consisted of Cardboard-work, Netting, simple Weaving, the making of models to be used in connection with lessons in Geography, History, and Science.

(d) *Examinations affecting Practical Work.*

If practical work was to take its proper place in education it was necessary to modify the requirements of leaving examinations, which at present handicapped this work. In the case of girls in the ordinary Secondary School, the pressure of examinations made it difficult to give much time to Domestic Subjects between 15 and 18. It was necessary to amend the tests so as to take this kind of work into account.

*Note.*—With reference to the above evidence, which was given in November 1909, Dr. Nunn writes, November 1912:—

“The above statements require considerable modification in view of the introduction of the Board of Education's scheme for four years of training. This scheme is being adopted at the London Day Training College, with the result that henceforward all students will have the advantage hitherto enjoyed only by those who had taken an intermediate examination before admission. That is to say, the great bulk of the professional work will be taken after the student has completed his degree course. Although all students will nominally take the four years' course, yet those who have already passed an intermediate examination will actually spend only three years in the College as heretofore.

“Since the date of this evidence the College curriculum in Hand-work has developed to a considerable extent along the lines there indicated as desirable. It has been found possible to give more time to constructional exercises in connection with courses on the teaching of the ordinary subjects of the school curriculum. All women now take a short and very simple course in Wood-work, and the men a similar course in Metal-work. The Cromer Street Demonstration School has come, as far as methods of teaching are concerned, entirely under the control of the College, and the London County Council have appointed a special Headmaster who ranks as a member of the College staff. This arrangement greatly facilitates the efforts that are being made to find sound methods of correlation between Hand-work and the ordinary subjects. Lastly, the College has become a School of the University of London.”

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MR. CHARLES OXLEY, Superintendent of the Desford  
Industrial School, Leicester.

(*Evidence given November 10th, 1909.*)

THE DESFORD INDUSTRIAL SCHOOL, LEICESTER.

The witness stated that there were about 200 boys in his school. They were received at the age of 8 or after, and discharged not later than 16, generally 15½. As a matter of fact a very small proportion came as early as 8, the great proportion entering between 11 and 13. They were retained on the average about four years. A few of course stayed a great deal longer, and some unfortunately only about two years. The school was under legal requirement to keep in touch with its pupils for three years after they had left. As a matter of fact, it kept in touch with a large number of boys far beyond

that time, and a great number of boys revisited the school some time after they had left.

The boys were not really below the level of the ordinary Elementary School boys in intelligence, though they appeared to be so when they entered the school. The parentage was as a rule a good deal below the average, and some of the homes were of the worst possible kind. Fully 50 per cent. of the fathers were casual labourers. It was impossible to tell what a boy had in him until he was removed from his evil surroundings and had been in school for some time.

The witness had not found that the boys were hampered to a large extent by hereditary characteristics. His opinion was that environment had most to do with the shaping of their characters before coming to the school.

None of the committed boys in Industrial Schools had ever had convictions recorded against them, but the large majority had appeared before a magistrate on some charge. Some other schools admitted voluntary cases, but these were few in number.

#### THE EFFECT OF THE INDUSTRIAL SCHOOL COURSE ON THE DEVELOPMENT OF CHARACTER AND INTELLIGENCE.

All boys admitted to Industrial Schools were sent for the distinct purpose of reforming and developing their character and for the acquisition of knowledge.

##### (a) *The Effect on Character.*

Taking the broad results of the last six years, 84 per cent. of those who had left were doing well, *i.e.*, they were in good employment and giving satisfaction, as certified by reports from the employers themselves.

The reformation of this type of boy could not be accomplished simply by an academic education: the boy's interest must be aroused and kept alive by an occupation; he must be taught and developed by what he did, and in "doing," moral qualities were developed and exercised. Confidence, self-reliance, accuracy, cleanliness, realisation of the value of industry, enthusiasm, initiative and the power of adaptation to varying circumstances were some of the results. The more the employment could be made to interest him the better fellow he became.

A distinctly better tone had been noticed since technical instruction had been applied to handicrafts. Previously simply the trade processes were taught. A boy in the tailoring department was taught to make a garment, and one in the shoe shop to make a boot. But no instruction in the principles of the work was given. Now lectures were given in each department by the trade instructors. Since this change was made there had been a great change in the boys. They were much more anxious to do their work, and the drudgery of the work had

been replaced by more pleasure in the occupation. A keener interest had produced more industry and counteracted idleness and carelessness, both great factors in deterioration of character.

When boys left standards 1 and 2 and entered the workshops, distinct advance was noticed in their tone and bearing. They became more manly and more determined to maintain their position in the school. There were many instances of most troublesome boys becoming good at their trade, and acquiring great interest in their work, with a complete change in their conduct.

(b) *The Effect on Intelligence.*

As regards intelligence, of 272 boys admitted during the last six years,

201 were below standard 1 or in standards 1 and 2.

36 of these could not read or write,

9 were under 8 years of age,

consequently these standards were, in attainments, below similar standards in Elementary Schools.

The boys in these standards had occupations each Saturday morning, for seven weeks in summer, and at Easter and Whitsuntide. Every day in the week except Saturday they were in school full time; but on that one day they were out at different occupations during the morning.

In standards 3-6 the time set apart for Handcrafts was 19 hours per week, the pupils spending alternate days in school and workshop.

From standard 3 and upwards the standards became in advance of similar standards in Elementary Schools where a similar type of boy attended, and very little, if any, below those in the best type of Elementary Schools. The subjects of the Industrial School were practically the same as those of the Elementary School.\* But the time devoted to actual school work in standard 3 and upwards was only 15 hours per week in the Industrial School as against 27½ hours in Elementary Schools. The comparison might be fairly made by deducting 2½ hours from the 27½ hours of the Elementary School for the teaching of Physical Drill and Manual Work, subjects taught in Industrial Schools generally outside ordinary school hours. The witness had had 18 years' experience as headmaster in Elementary Schools, including one of 600 pupils in Leicester, and 15 years as superintendent of an Industrial School, and he was able to say that Industrial School boys were more enthusiastic in their ordinary school-work, had more confidence in attacking a new subject, and brought more intelligence to bear upon it.

In support of this, an Inspector gave a lesson in an Industrial School along with several Elementary Schools on some new

\* Reading, Writing (Dictation, Composition), Arithmetic, Drawing, Geography, History (through Reading), Observation, Elementary Science, Music (Singing), Recitation, Religious Instruction.

method of teaching Arithmetic, and afterwards stated to the witness that the former grasped the new ideas better, and attacked the difficulties more readily than the latter boys.

Thus not only did the boys acquire technical skill, but their schoolroom work also was improved and reached a higher level of intelligence than was generally looked for to satisfy the requirements to pass to the next higher standard. The subjects which benefited most by the teaching of Handicrafts were Arithmetic, Geometry, Drawing, Natural Science, as well as the development of Observation. On the whole a higher standard of work was obtained in the schoolroom, and in less time than in those schools where Handicrafts were not taught. In addition the acquirement of manual skill had a most important effect on the future of the boys. But even if the need for giving skill in trade ceased to exist, from the purely educational point of view the witness would not think of giving up the Manual side of the curriculum. It would not be so possible to reform these boys and make them fit for life without Handicraft teaching.

*(c) Influences other than Practical Work in the Industrial School.*

The witness said that while his experience had convinced him that the teaching of Manual Instruction and Handicrafts assisted in developing character and intelligence and the teaching of kindred subjects, yet in assessing the proportion of its influence in an Industrial School other factors must be considered—the whole circumstances of the school must be taken into account. Other influences were brought to bear on the boys in Industrial Schools which had an important bearing on character and intelligence and which were not always possible in Elementary Schools. Such were, good and sufficient food, regular discipline and continual supervision, a constant atmosphere of education appealing to them at almost every hour of the day, recreative evenings with lantern lectures, singing and private reading, separation from undesirable parents and surroundings and the influence of the streets, Physical Training thoroughly done, and regular attendance at Religious Instruction and services. All these were factors, beyond the Technical and Manual instruction, which had an influence on character and intelligence, and it was therefore not fair to infer that the whole of the benefit arising from a period of training in the Industrial School was due to the teaching of Manual Instruction and Handicrafts.

THE EFFECT OF THE INDUSTRIAL SCHOOL COURSE ON THE AFTER-LIVES OF BOYS.

When the boys left school one of the most important needs was to keep them away from their old surroundings.

Evidence of the effect of a practical course of education on the after-lives of boys was to be found in the following particulars.

During the last six years 272 boys had left the witness' school.\* Of these, 23 were mentally deficient, dead or unknown. Of the remaining 249 boys, 84 per cent. were now doing well, and 76 per cent. were sent on leaving the school to the occupation, or a kindred one, taught them in school. Their dexterity and intelligence enabled them to become regularly employed in these trades, although not all taught in school. Their occupations in school gave them a skill with their hands and a general ability which they were able to apply to other trades and occupations if necessary.

Out of the 249 boys, 32 were musicians (mostly bandsmen), and 13 tailors or shoemakers. There was difficulty in placing boys in these trades, on account of the regulation of boy labour by the trades unions. But they were able to enter the army as tailors, shoemakers, or bandsmen, and it was found they generally came out on top. As bandsmen, for instance, these boys were generally the solo-players; a number had gone to be trained at Kneller Hall, and some were band sergeants. Witness said in reply to a question that no stigma attached to boys from Industrial Schools in the army. One boy from the witness' school had been offered a Commission, and another was in the rank next below a Commission.

A full list of the occupations of these 249 boys is given in an addendum to this evidence. They include, as will be seen, farming, gardening, mining, army, navy, and merchant service, a variety of skilled trades and four clerkships.

The witness believed, however, that a few particular cases of a varied kind would best show the value of the training given in the school. Remembering the class of boys coming to the school, he regarded the progress made in these cases as very striking:—

- A. A baker, owning his own shop and several houses. In the bakery department of the school he developed the capacity that has built up his business.
- B. A baker's foreman.
- C. Staff Sergeant-Major in Army. Warrant Officer. Controls an office with 10 or more clerks under him.
- D. Second gardener on a nobleman's estate.
- E. Member of a fire brigade for the last eight years. Has been promoted each year. A gardener in school.
- F. Stationmaster in South Africa. A gardener and also band-boy and office-boy in school. This boy was in the war and, at its conclusion, remained in South Africa.
- G. Retired from the navy, and now owns six houses.
- H. Band Sergeant.
- I. Commercial traveller.

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\* See note at end (p. 269).

- J. Farm foreman. Three of this boy's brothers had been in the school and two of them are doing well. Both these boys entered the army as musicians and one of them has been promoted to the rank of corporal and bugle instructor. The mother was mentally defective, and this weakness showed in the case of one of the boys. The father was working away from home, so the boys simply ran wild in the streets before they were sent to the Industrial School.
- K. Ship's officer. An unruly boy with a most unsatisfactory mother. Now second officer on a passenger boat.
- L. A butcher; in the same situation 15 years and now starting a business of his own. Mother a very bad character.
- M. Captain of a vessel; attended special school to prepare for Board of Trade examinations after completing his apprenticeship. When he left the Industrial School his father said he never wished to see him again.

In the majority of these cases the occupation taken up in the school was not the same as that followed after leaving, showing that the Manual training and Handicraft taught in school is successful in preparing boys for a wide variety of work.

The home circumstances were generally most unsatisfactory. The homes were often dirty and neglected, and the parents drunken and in some cases immoral. Some of the boys were found wandering or had been sent begging.

Of the 16 per cent. who were not doing well, some were in casual employment, some had no work at all and some had been convicted. Between 4 and 5 per cent. got into trouble after leaving the school; but it was often found that they did well even after coming out of prison. One who had been convicted was now in an excellent position in a large baking establishment.

#### THE TEACHING OF TRADES.

The occupations taught in the school were instrument-playing, tailoring, shoemaking, carpentry, gardening, baking, blacksmithing, farming, and two boys were placed with the mechanic in the engine-room. Everything that the boys wore was made on the premises. The school did not claim to turn out its boys as skilled hands in their respective trades; but they were taught to observe, and to use the necessary tools, and their interest in the work was developed.

The selection of occupations for the boys was, in the first place, a matter of supply and demand, but eventually a boy drifted into the occupation he most liked. It was, of course, impracticable to keep more than a certain number in the shoe



or tailoring shop, since only a certain amount of clothing was required by the school.

The witness made it a rule for the boys to come and see him every other Sunday night. If they wished to make any suggestions as to occupations they could do it then. He endeavoured to ascertain their likes and dislikes, and when vacancies occurred in any department gave them to boys most likely to profit by the work. A boy was not encouraged to go to a particular branch merely in order to be with one of his mates. Many boys could not be placed anywhere but on the farm.

It was found that music had a very refining influence, and boys were not chosen for the band on account of any capacity or talent they might have, but solely on the grounds of their home circumstances. By this means a boy whose home was unsatisfactory would eventually be drafted into the army and entirely separated from his home. In spite of this, in 15 years only six boys had been rejected from the band as being incompetent to continue a musical training.

### ADDENDUM A.

#### DESFORD INDUSTRIAL SCHOOL.

*Trades of Boys who have left during the period 1904-9.*

Dyer - - - -	2	Clerk - - - -	4
Mat Maker - - -	1	Asylum Attendant - - -	1
Tailor - - - -	4	Fish Salesman in first-class shop	1
Shoehand - - - -	9	Sailor - - - -	3
Gardener - - - -	8	Valet - - - -	10
Farmer - - - -	58	Messenger in organised corps -	9
Musician - - - -	32	Porter - - - -	13
Miner - - - -	17	Soldier - - - -	25
Baker - - - -	8	Navy - - - -	4
Mechanic - - - -	14	Hawker - - - -	2
Tin Worker - - -	1		—
Carpenter - - - -	2		72
Chauffeur - - - -	3		—
Glass Blower - - -	1		—
Jeweller - - - -	1		—
Rope Maker - - - -	1		—
Umbrella Maker - - -	1		—
Painter - - - -	2		—
Bricklayer - - - -	3		—
Sawyer - - - -	3		—
Printer - - - -	2		—
Mineral Water Manufacturer		Total	249
(Foreman) - - - -	1		—
Butcher - - - -	2		—
Timber Merchant - - -	1		—
	177		

*Note.*—With reference to the above evidence, Mr. Oxley sent the following statement on 26th November 1912:—

THE EFFECT OF THE INDUSTRIAL SCHOOL COURSE ON THE AFTER-LIVES OF BOYS.

During the 9 years from July 1903, when the Education Act came into force in Leicester, to November 1912, 446 boys left the witness' school. Of these, 21 were mentally deficient and 9 are now dead or unknown; 15 of those mentally deficient were capable of earning their living as porters, labourers, or farm servants. In the last 3 years, 1909–1912, 90 per cent. of the boys were sent on leaving the school to the occupation, or a kindred one taught them in school.

386, or 87 per cent., are doing well.

55, or 12 per cent., are unsatisfactory. (5 per cent. were convicted.)

5, or 1 per cent., are dead.

After deducting the 15 who are dead or unknown, and those incapable of work, 431 are accounted for in the list of occupations given in an addendum to this evidence.

Out of the 431 boys, there are now 49 musicians (mostly bandmen in the Army or Navy), 9 Tailors, 35 Shoemakers, 24 Bakers, 7 Carpenters, 7 Blacksmiths, 10 Gardeners, 6 Mechanics, and 8 Hosiery Hands.

The statement that there was difficulty in placing boys in the trades of tailoring and shoemaking on account of the regulation of boy labour by the trades unions, should be modified by the additional one, that on leaving school at the age of 15½ the wages are at first not sufficient to pay for the boy's board, lodging and clothing. They cannot be sent to their homes, as the home circumstances and surroundings are generally unsuitable and undesirable.

This difficulty has been somewhat overcome by the establishment of a Boys' Home in Leicester licensed to accommodate 18 boys. Here boys live until they earn sufficient to go out into lodgings and are able to support themselves; this they can do generally by the time they are 18 years of age. In the two years the Home has been open, 15 of the boys living there have been placed as shoemakers, 2 as tailors, and 10 others at a skilled occupation.

ADDENDUM B.

DESFORD INDUSTRIAL SCHOOL.

*Trades of Boys who have left during the period 1903–1912.*

Bakers - - - - -	24	Mechanics - - - - -	6
Army Musicians - - - - -	49	Clerks - - - - -	4
Soldiers (enlisted after leaving school) - - - - -	16	Miners - - - - -	13
Farm Servants - - - - -	163	Footmen or Indoor Servants - - - - -	16
Gardeners - - - - -	10	Butchers - - - - -	3
Shoehand's - - - - -	35	Dining Car Attendant - - - - -	1
H.M. Navy - - - - -	12	Asylum Attendant - - - - -	1
Caretakers of Schools - - - - -	10	Painter - - - - -	1
Carpenters - - - - -	7	Electrician - - - - -	1
Blacksmiths - - - - -	7	Watchmaker - - - - -	1
Tailors - - - - -	9	Sailors - - - - -	2
Hosiery Hands - - - - -	8	Wheelwright - - - - -	1
Cook - - - - -	1	Printer - - - - -	1
Dyer - - - - -	1	Bricklayer - - - - -	1
Ropemaker - - - - -	1	Chauffeurs - - - - -	2
Stoker - - - - -	1	Umbrella Maker - - - - -	1
Porters - - - - -	11	Fish Salesman in first class shop - - - - -	1
Labourers - - - - -	10		
		Total - - - - -	431

Dr. W. H. D. ROUSE, Litt.D., Headmaster of Perse Grammar School, Cambridge.

(Evidence given June 5th, 1912.)

Witness explained that he had three schools under his charge :—

- (i) For babies of from 4-8 years of age, containing about 30 pupils.
- (ii) A preparatory school for boys of from 7-10 years of age, containing about 60 boys.
- (iii) An upper school for boys from 10-19 years of age, containing about 180 boys.

About one-half of those in the upper school had previously attended the preparatory school. Many boys came to the school at about 12 or 14 years of age improperly prepared. In answer to a question, witness said there was a great difference between those who had attended the preparatory school and those who had not. The babies were engaged in physical practical work combined with intellectual work nearly all their time; they did very little mere book work, but a great deal by speech and hearing. No language except English was taught to boys from 7-9 years of age, but a certain amount of Mathematics was done every day. A great part of the English work was combined with physical action. In the upper school those boys who had been through the preparatory school were almost a stage (*i.e.*, a year's normal work) in advance in general intelligence of those who had not. This was borne out by the result at the top; for an open scholarship for the University had been gained every year for several years by a boy a year under the usual age (*i.e.*, under 18).

Under the Regulations of the Board of Education some ordinary Manual work had to be done at the school; accordingly there was accommodation for Clay-modelling and Drawing, but there was no workshop. In only one or two of the forms Modelling was taught to boys under 10 years of age. Sewing and Knitting was taught up to a certain age, and was then continued in the Scouts' course.

Witness considered that boys between the ages of 14 and 19 should do Manual work, even though they were working for classical scholarships. No specialisation in fact should exclude Manual work. He suggested that the potter's wheel was suitable for boys over 16 years of age. Spinning and Weaving were also good. Gardening was also useful for training observation.

As far as his experience went, witness considered that Handwork as taught in Schools was generally a substitute for some other subject, or at least was not connected with the intellectual work. In any case, it was practised for its own sake either because it was useful in the boy's future career or

because it was amusing. Often it was used to fill up the time of a boy who had been considered unable to do any more useful work. Although the view was held that Handwork reacted on other work, the witness did not think that there were certain faculties trained by means of Handwork which could be utilised in other work, but that it reacted by vitalising the intellectual work. For instance, the memory trained in respect of one subject was not thereby made stronger in respect of another.

In answer to questions, witness said that boys who were considered dull suddenly improved in their English as soon as the teaching was coupled with physical activities.

#### SUGGESTED SCHEME OF BODILY OR PHYSICAL WORK.

Witness preferred "bodily" or "physical" work to "Handwork."

The scheme he suggested should begin with children of 4 years of age. It should include—

- (i) Physical Exercises of the body as a whole, such as drilling, dancing, balancing, and bending.
- (ii) Exercises of parts of the body, such as the hand, eye and ear, and of the voice.

Such exercises consisted of—

- (a) The practical application of theoretical knowledge.
- (b) The child's version of what it had gained by observation and mental assimilation.
- (c) The natural expression of the child mind—especially in the early stages when the child had more intimate knowledge of things than of words.

The results on the intelligence were—

- i. The production of greater versatility of brain power.
- ii. The conservation of individuality and originality.
- iii. The opening out to the mind of other means of reproducing thought than by prose, which might result in the production of poets, musicians, artists, &c.

There were two kinds of physical work: applied physical work, which should always follow theoretical teaching, and independent physical work, which should aim at surmounting some ordinary practical difficulty.

The work should not be isolated, but should always be used in connection with some definite lesson.

The most useful forms of physical work were, in the witness's opinion:—

For beginners—Brush and pencil Drawing, Modelling, Sewing and Paper-cutting. Equally important, as a means to the same end (viz., the training of the intelligence) were:—Acting, Drilling, Music, and Dancing.

For older pupils—Practical Physics and Chemistry, {Carpentry, Engineering, &c.

Physical work should be continued throughout the whole school course. Intelligent teachers would be able to judge what forms of it were most useful in the upper classes where the pupil's tendency to specialise might be expected to assert itself.

Witness then proceeded to explain the practical application of physical work to the theoretical teaching of various subjects.

*Reading* should be taught by the Dale method, which represented sound by colour, and used other physical devices to help.

Stories read should be reproduced by illustration; un-common objects should be modelled, and new words expressing action should be acted until their meaning was familiar. Scenes also should be modelled.

*History and Literature.*—After the theoretical lesson the story told or read should be reproduced either by written Composition, or by Drawing, Modelling, or Acting. Large models made by all the children gave the best results and trained them best in the thinking out of the details which go to the making up of the complete model. Acting with toy models (brought by the children) and the acting of the children themselves should be encouraged. As Dancing was so useful in the expression of a child's emotions it should be freely used in the early stages. The children could, in many instances, make their own properties.

*Languages.*—In Language teaching, not only would acting take a prominent part from first to last, but models of antiquities and foreign scenes might be made, and a foreign language might be used by a class when practising any one of the arts and crafts.

*Geography.*—For the teaching of Geography, models were indispensable. They should be large and comprehensive, and accurate in detail as far as possible. Maps should be the result of models.

In answer to questions, witness said he considered a Geography garden was suitable for the earliest ages when children were learning the physical features of the earth, *i.e.*, up to about 10 years of age.

*Nature Study.*—Practical Gardening and nature walks should, in witness's opinion, be counted as physical work. The practical and individual care of plants and animals should be encouraged. The aim should be, not merely to train the child in habits of observation, but to show that he had a share in the responsibility of caring for, maintaining, and propagating life. The school garden should contain all that was necessary for growing all kinds of plant life, *e.g.*, orchard, marsh, water, rocks, &c.

*Science.*—Experimental Science of all sorts should be encouraged, and the pupils should make their own apparatus.

*Independent Physical Work.*—This, of course, must vary with the conditions of the school and the ages of the children, but the aim should be the surmounting of difficulties rather than the production of perfect specimens of work. For example, Painting and Drawing should, in the early stages, include figures of men and animals. In all cases articles easily made and quickly finished were more useful than those of extreme delicacy of work.

Many activities could be included in the Scouts' course, and the time-table might be re-arranged to give adequate time to Scout work. At present there was no organic link between the Scout work and the other work of the Perse School.

#### EFFECT OF THE SYSTEM.

In answer to questions, the witness said that the effect of the training he had outlined was that it always made the boys want to do something useful. By learning to act they had a hobby for all time. The training of the senses in the early stages developed artistic appreciation, and, generally speaking, tended to produce what was commonly known as an "all-round" man. Witness was firmly convinced that Manual training helped the mental powers and made other subjects more easy to acquire.

#### TEACHERS.

In answer to questions, the witness said that the teachers on his staff had had to pick up this kind of practical work after becoming teachers. As a rule they were quite able to give the kind of instruction he had outlined.

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Mr. F. W. SANDERSON, Headmaster of Oundle School.

(*Evidence given June 5th, 1912.*)

Witness explained that Oundle School was a Boarding School, containing about 350 boarders with ages ranging from 9 years onwards. In the Preparatory School were 28 boys with ages ranging from 9 to 13. In the Upper Department the ages ranged from 13 to 19½. The majority of the pupils left at about 18½ or 19½ years of age, but a few left at about 16. About 20 to 25 per cent. of those who left went to the Universities.

The remainder entered the Professions (Medical, Legal, &c.), Engineering trades, business, commerce, &c.

Those who entered the Engineering profession generally remained at the School until 19 or 19½.

The entrance examination was for placing boys in the School. As a rule, boys took the Common Entrance Examination. Boys were entered in the order of their applications.

The School hours were about 33 hours a week; the hours being from 7 to 8, 9.30 to 11.15, and 11.30 to 1, with two hours in the afternoon on three days a week. In addition to this two hours or  $1\frac{1}{2}$  hours were spent in the workshop.

#### METHODS OF INSTRUCTION AT OUNDLE SCHOOL.

The witness stated that an attempt was being made to teach in a practical manner—using vocational subjects for the purpose of teaching theoretical principles, and as far as possible to learn by doing; so that a boy on leaving school at any stage might go out with the capacity for using what he had learnt.

Witness considered that Mathematics and Science should be taught by the methods of a well-organised workshop. He was of opinion also that the same method could be applied to other subjects. In the case of Literature—especially for young boys—an extemporised theatre would take the place of the shops. In History and Art use could be made of museums and libraries. In answer to further questions he said the school possessed a room in which coloured prints, photographs and historical charts were exhibited. The charts, maps and drawings were prepared by masters—in some cases by boys—and the boys were set to copy them, or to prepare similar ones. In selecting and exhibiting the illustrations use was made of the guide books to our great National Collections. In the museum no class teaching was given. The room was used as a reference room in connection with the library—but from time to time classes were taken into these rooms—the master in charge acting the part of conductor or guide.

#### “WORKSHOP” METHOD OF TEACHING MATHEMATICS.

In this method the boys were set to do work in the shop, to investigate the working of a machine, to carry out experimental tests, and to be responsible for the “power” station. The class was looked upon as a staff of workmen actually engaged in some “live” work. In the course of this work they learnt their Science and Mathematics incidentally and practically.

In carrying out this method three rooms were used:—

- i. The workshop itself, which contained woodwork tools, benches, screw-cutting lathes, planing, drilling and milling machines; power being supplied either by separate motors or through shafting.
- ii. The engine room, which contained a steam engine and turbine, gas and oil engines, and dynamos. This plant was used to supply the electricity for school purposes and was also designed for experimental work.

- iii. An engineering laboratory and testing room, which contained instruments for the testing of gauges, the determination of the calorific value of coal, gas and petrol, the testing of ammeters and voltmeters, and other experimental plant.

Skilled workmen were continuously employed in connection with the workshops. They did the repairs of the school and the boarding houses, provided the electric lighting, undertook the wiring and laying of cables, and made some of the machines, instruments and tools which were required, and the whole of this work was made use of in the education of the boys.

The following list of experiments shows the nature of the work done :—

- (a) *By Junior School boys—ages between 10 and 13.*

The working of geared wheels ;  
 The action of a screw-cutting lathe ;  
 Investigation of various pulley tackle ;  
 Finding the speed and horse-power of a motor ;  
 Measuring the benches in the shop ;  
 Investigating the shafting, &c., &c.

- (b) *By Fourth Form boys—ages between 12 and 15.*

Testing the readings of a pressure gauge, using a Crosby Gauge Tester ;  
 Finding the efficiency of an electric motor ;  
 Finding the calorific value of coal and gas ;  
 Gas and steam engine and dynamo trials, &c., &c.

#### ADVANTAGES OF THE "WORKSHOP" METHOD.

Each boy being regarded as a member of the staff and having his definite work to do, found that whatever work he was engaged upon was of importance to the whole. The experiments involved the use of a wide range of Mathematics, and in carrying out those experiments the boy learnt the use of mathematics as he learnt the use of tools—by constantly applying them. Questions arising in concrete form made a more vivid and lasting impression on the mind.

Another and perhaps more important advantage of the "Workshop" method was that scientific phenomena and theories were studied "in parallel" and not "in series." Many ideas were encouraged to grow up simultaneously. The calculations involved suggested further developments in Mathematics, and alertness and zeal were encouraged.

The experiments required careful reports of some length, and such reports should contain tables of observations and readings, graphs, drawings, photographs, and in some cases historical introductions. The writing up of these reports was especially valuable to boys of distinct scientific tastes and should form part



of the work of a science form. The drawing of plans, sections, &c., gave them an idea of Geometry; familiarised the pupils with geometrical facts and theories, and made them capable of reading machine drawings. In this way, too, a knowledge of Solid and Projective Geometry was acquired early.

#### THE "PRACTICAL MEASUREMENTS" METHOD.

There were at the school organised courses for all the forms in elementary practical measurements, Hydrostatics and Mechanics. The experiments were done in forms, and the time devoted varied from one to three hours, and were carried out in the physical laboratory or in the junior chemical laboratory.

The experiments were of a simple character, each one being designed to isolate some principle or property and to make it prominent. They could, therefore, be arranged to follow and illustrate a logical development of the subject. As all the boys in a class could be set to work the same experiment at the same time, the laboratory course itself formed the basis of a strictly logical treatment in the class-room.

There are some objections to the strict adherence to this method, and experience suggested that without some elasticity and freedom from syllabuses the subject would become as great a slave to "logic-chopping" as anything ever was or could be in a mathematical class-room.

The elementary apparatus and material should as far as possible be the machines and tools of everyday life; and not the specially made spheres, cylinders, cones, pulleys, levers of the instrument makers.

The logical treatment should be departed from to the extent of allowing a certain number of boys at every lesson to be engaged in practical work which requires the use of more complex and more accurate apparatus. The class, too, may be set to investigate the properties of matter, quite independently of any order of sequence. Such experiments would break the monotony of the more elementary course of experiments, and would be more inspiring.

#### PRACTICAL MATHEMATICS IN THE MATHEMATICAL CLASS-ROOM.

The mathematical class-room was not used for experiments, its function being more that of a drawing or calculating office. Hence in the class-room experience was gained in practical methods of carrying out calculations. Problems which occurred in the workshops and laboratories or in the agricultural fields were worked out, and exercises of a practical character suggested by those problems were set. This work involved the use at an early age of logarithms, slide rules and other mechanical aids. Arithmetic, Algebra, Geometry and Trigonometry were studied or applied simultaneously and were freely used one with another.

One lesson per week was devoted to doing some continuous piece of calculation. When the calculations had been made and tested the boys wrote a report on the work. Work thus done was of value, and need not be scrapped.

#### AGRICULTURAL SCIENCE.

The school had 20 acres of land devoted to agricultural experiments. Experiments were carried out in the cultivation of beetroot, wheat, barley, oats, clover, and potatoes. Agriculture was taught for its own sake, and only incidentally from the point of view of making agriculturists. The object of the School was to teach the subject in a practical manner so that a boy might at once be capable of using his knowledge and craft. It was taught with a theoretical bias; in the course of the instruction a boy would learn Chemistry, Physics, Mathematics, English, and Biology. In Biology the fields played the part taken by the workshops and laboratories in Engineering Education.

In illustration of the indirect method of teaching the ordinary school subjects, the witness gave an example of how elementary Mathematics could be taught, and exercises given in the writing of reports. The operation of weighing the beetroot crops and the data obtained were given to the mathematical classes, and they were set to work out the percentage results, and make comparisons with the agricultural returns in England and Prussia. In work of this kind quite young boys were taught the meaning of averages, the getting out of percentages, and given exercises in the elementary rules. The results themselves were interesting and appealed to the imagination of the boys, and the mathematical methods became part of the boy himself. He learnt these methods in the process of doing something, incidentally, intuitively, with the result that he could use them without apparent effort.

#### CLASSICAL FORMS.

Witness said that there was a considerable classical side to the School. Half the number of boys in the Senior School were on the classical side. About the age of 15½ years these boys dropped Science work and devoted their time to Languages. A large number of them did the "Workshop" work voluntarily after School hours, but a certain amount was done as part of the School work. The lower forms of the classical side and the Junior School had the workshop training in Mathematics and Science which had been described.

#### SCIENCE SOCIETY.

This Society was formed of the boys in all parts of the School. There were about 250 members. The Society divided

itself into sections and the various sections carried out investigations in their respective subjects. Much valuable work of a research character—especially in Natural History—was thus done.

#### “DULL” BOYS.

Witness did not agree that “dull” boys existed—or at any rate were common. Many who appeared to be dull got on quite well under the “Workshop” method. Some boys wanted to think in things, and witness thought that such boys were not unlikely in a majority in all schools. So-called dull boys were quite successful in after life.

It was, he thought, advisable to allow boys to devote a considerable amount of time to subjects which especially appealed to them. In this way they would gain in self-respect and confidence. They would be judged by what they could do best. Their intelligence would be trained, and they would at a later stage willingly and with better results return to subjects which had been dropped. They would learn to take an interest in their school work, and would not depend too much upon games.

In answer to questions, the witness gave as his experience that boys considered dull developed intellectually when set to work in the shops, laboratories, drawing office or fields. Cases had frequently occurred of such boys reaching a high standard and gaining University scholarships. Dullness was sometimes due to a boy's inability to ignore difficulties, and to his want of familiarity with the facts and terms involved in the question before him.

#### TEACHERS.

Witness said, in answer to questions, that it was difficult to obtain teachers who had the right attitude of mind towards the “Workshop” method.

The principles of the method were: (1) to work at practical subjects—Mechanics, Engineering, Agriculture, History, English—in a workshop and business way—always being engaged on “live” work; (2) to learn thereby incidentally the ordinary school subjects; (3) to have the firm belief that this kind of work, if fully understood and appreciated, contained all that was necessary and sufficient for life.

At Oundle the workshops were under the charge of skilled workmen—not theoretical instructors, but skilled craftsmen. He made a great point of this. He also made a point of the fact that boys should acquire skill in the use of tools and measuring instruments—and that the theory of the tools and instruments, and of the theoretical principles involved, should be learnt afterwards.

Sometimes witness borrowed men from engineering works to carry out special work, and the boys had the advantage of their special knowledge and technical skill.

In answer to further questions, the witness said he was also Headmaster of Laxton School—a small rural Grammar School. He carried out the same scheme as at Oundle School. The average leaving age at Laxton was about 16 or 16½. Those who remained after that age were taught in the adjoining Oundle School. Chemistry was taught with a “land basis,” *i.e.*, in teaching Agriculture, Chemistry was taught incidentally. The work commenced with practical methods and worked up to theory. Laxton School had a distinctly agricultural bias, and each boy could have a small plot of land to cultivate. The work on the plots was done partly in school time and partly out of school.

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Mr. E. H. SMITH, Headmaster of Sexey's School, Blackford,  
Wedmore, Somerset.

*(Evidence given December 20th, 1911.)*

SEXEY'S SCHOOL, BLACKFORD.

The witness said that this school was built about 12 years ago under a Scheme of the Charity Commissioners, and received grants from the Board of Education and the County Education Authority. It was a mixed school with about 110 pupils, of whom about 30 were boarders. Thirty per cent. of the pupils were “free place” scholars, and the rest were mainly the sons and daughters of farmers and professional men. The usual age of entry was between 12 and 13, and very few remained beyond the age of 16; many left earlier. The staff included eight resident masters and mistresses in addition to the Headmaster, and all were thoroughly well equipped for the work and keen on it.

From the first the curriculum had included French, Mathematics, English Grammar, and Literature, all kinds of practical work in Chemistry, Physics, and Botany, Wood-work and Mechanical Drawing; and, for girls especially, Cookery, Laundry-work, Housewifery, Needlework, and all kinds of Drawing. No exceptions were allowed, and applications for such were extremely rare; in fact, parents had now cheerfully accepted the courses of study offered.\*

THE PLACE OF PRACTICAL WORK IN THE GENERAL  
SECONDARY SCHOOL COURSE.

The witness attached great importance to practical work of all kinds throughout the whole course, but considered that it should always be planned with some definite object in view,

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\* The Time Table in use at this school is given in Appendix A. (*see* p. 131).

and be closely connected with the actual teaching of every department of the school.

During the first five years of its existence the school did practical work of a more specialised kind than at present. Besides work in the workshop and garden, it included visits to the County Cheese School, Butter School, and Cider Institute, and lectures by the County Instructors on butter-making, pruning, bee-keeping, &c. This had all been dropped for the following reasons. The size of the classes had at once begun to present difficulties, as had also the fact that pupils of both sexes were working together; the work trespassed on the work of other branches of the school course, the exercises taking up more time than could be spared; and no credit was given to this work by the Inspectors of the Board of Education. The practical work now done was better organised, more systematic and more educational, and no work was admitted unless it had a distinct bearing on local conditions, and could be tacked on to the deeper studies.

The practical work of the school at present occupied an average of  $6\frac{1}{2}$  hours a week, exclusive of the time given to Drawing. It included Wood-work, Gardening, and practical work in Science and Mathematics, together with Domestic Subjects for girls. The time devoted to this kind of work was probably more than was given to it in most Secondary Schools, and, in the witness' opinion, it was quite as much as was needed.

In spite of the great value of practical work, the witness was of opinion that it would be most undesirable to sacrifice any of the more difficult and trying subjects of the curriculum in order to gain a great reputation for this type of work. He did not admit of "royal roads" to knowledge in any subject, nor encourage special selection, even in Mathematics, by filtering out just those portions that would be useful, for example, in measuring a piece of land or calculating the amount of material necessary to make a hen-coop.

He was convinced that practical work in the early stages must not occupy the premier position. The pupils were ever ready and anxious to do anything with their hands; but reading and solid study seemed to their minds to occupy a second place, and each batch of new pupils was similar in this respect. This was perfectly natural, because quite apart from the fascination of all kinds of practical work for the boys themselves, the influence of their home life accentuated these ideas, the parents openly expressing their approval of anything that involved Handwork, and rarely failing to take a deep interest in progress in this direction, whilst reading and finding out things by means of books was little thought of.

The net result of the witness' experience was that too much practical work tended to suppress the desire and inclination for the reading and pursuit of knowledge through the more

difficult lines of study, which were so essential in facing the problems of ordinary and of rural life. A large proportion of the farmers rarely read even up-to-date information about their own special work; their business had been learnt by hard practice in actual contact with the soil and by word of mouth, with very little book knowledge; they could not read, mark, learn, and apply this kind of information, and they did not like it. This attitude of mind in their children it was the aim of the school to eradicate. To emphasise unduly the importance of practical work at the expense of the harder grind at ordinary school work would be wrong, and would never lead to a better state of agricultural education in this country.

The practical work actually attempted must have a direct tendency towards practical application in the home, the workshop, and the farm; but it must be secondary to, supplement, and give relief to the more difficult lines of study adopted in the class room. It must, however, not be forgotten that practical work gave many opportunities to certain pupils to excel in this direction, whereas in many branches of school work they might appear to fail.

#### SPECIALISATION BY THE OLDER PUPILS.

Working under the conditions suggested above, the pupils at the age of 15-16½, should be ready for more real technical and practical work, and could profit by a simple kind of specialisation in practical matters concerning the business of life they were likely to adopt. This, at Blackford, really happened; but the side not well and systematically developed was that connected with agriculture, that is to say, with the very industry with which the district was most concerned. This, the witness felt, was a grave defect in the education provided at the school, and might be the cause of the serious leakage of boys between 15 and 16. It was most important that this leakage should be prevented, and the school life of those who intended to work on the land be extended to the fourth year.

For other pupils there were greater opportunities, *e.g.*, those who were going to be teachers, engineers, chemists, midshipmen, and, as a matter of fact, these always formed the VIth Form of the school; lads going to farming were rarely there. Hence some effort and adjustment to suit these special cases should be possible. These boys could with advantage go on the land at 17; but to lose a year of solid education from 15½ to 16½ at a critical time was surely not real economy.

The witness was of opinion that, given the proper opportunity, parents would take advantage of it and be prepared to make some sacrifice on behalf of their boys. He handed in a scheme for a Fourth Year's Course in Applied Agricultural Science, which he had drawn up with a view to the needs of lads

intended for an agricultural life.\* In reply to a question he said that he did not think the work could be performed so satisfactorily for such pupils at a Farm School under a scheme of the Development Commissioners as at certain Secondary Schools. It would be much more costly and would certainly involve some loss of continuity, whilst the students there would be of very uneven age. The Agricultural Colleges, again, were too expensive and too academic, and were not usually prepared to consider a single year's course. Besides, in the first year at these places there was altogether too much class-room work of a revisionary nature, and the work was too much of an experimental kind, and not conducted for profit on truly commercial lines.

The adoption of some practical scheme for boys of the Fourth Year who were going in for farming, market gardening, small-holdings, or colonial work would necessarily influence considerably the character of much of the practical work done in the previous three years. At the same time an incentive would be given to reach the stage of the special course of study.

#### SCIENCE.

In answer to questions, witness said that the Science work of the school, which included Chemistry, Physics, and Botany, was based, not on text-books, but on schemes framed by the school to meet its own special needs. The Chemistry and Physics were closely related to land cultivation, the farm and the home, and the Chemistry was largely organic. The syllabuses for boys and girls were somewhat similar during the first two years, but in the third year the girls gave up Chemistry and only continued Physics in the form of Heat and in connection with problems affecting Domestic Science. This gave time for a deeper study of Botany, in which they were particularly interested.

There was some difficulty at present in obtaining a Science teacher who could do justice to a course of Chemistry applied to the land. But the school had been fortunate in this respect, and more men were now qualifying in this particular direction.

The course of work in chemistry was not adapted to preparation for public examinations, and in consequence the pupils never took this subject in examinations. They were, however, able to pass advanced examinations in botany.

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\* This has since been adopted and now forms the basis of work in Form VI. B (Agricultural), nine pupils at the present time being in attendance (1912.)

## ADDENDA TO MR. SMITH'S EVIDENCE.

## ADDENDUM A.

*Subsequent Careers of Boys leaving Sezey's School, Blackford.*

During the past 10 years, 225 boys and 165 girls have left the school. Their subsequent careers being as follows :—

## Boys, 225.

109	Farmers—either having farms of their own or working in partnership with fathers.
27	In business.
19	Clerks.
12	Mechanical, Electrical, Railway, or Agricultural Engineers.
5	Teachers.
7	Colonists.
9	Civil Service.
5	Navy or Mercantile Marine.
18	Students, Carpenters, Surveyors, Timber Merchants, Masons.
4	Various (Policemen, Chorister, Millers).
7	Not known.
3	Deceased.

## Girls, 165.

60	Helps in Farm Houses, or Dairy Maids.
12	Married Farmers.
8	„ other than Farmers.
32	Teachers.
10	Clerks, Dressmakers, Domestic Servants (3).
17	Helps, Nurses.
12	In business.
1	Colonist.
1	Librarian.
12	Not known.

## ADDENDUM B.

*List of Boys who have left Sezey's School, Blackford, during the past Three Years, and who have taken up Farming.*

Name.	Form at Leaving.	Age at Leaving.	Number of Years spent in the Secondary School.
A. - - -	(V.)	16	2 years, 1 term.
B. - - -	(V.)	16	8 „
C. - - -	(VI.)	17	5 „
D. - - -	(VI.)	16	7 „
E. - - -	(V.)	16	3 „ 1 term.
F. - - -	(V.)	16	6 „
G. - - -	(V.)	16	4 „
H. - - -	(V.)	15	2 „ 2 terms.
I. - - -	(V.)	16	1 year, 2 „
J. - - -	(IV.)	15	8 years.
K. - - -	(IV.)	17	3 „ 2 terms.
L. - - -	(IV.)	14	1 year, 1 term.



Name.	Form at Leaving.	Age at Leaving.	Number of Years spent in the Secondary School.
M. - - -	(IV.)	16	3 years.
N. - - -	(IV.)	14	2 .. 1 term.
O. - - -	(IV.)	15	2 .. 1 ..
P. - - -	(IV.)	13	1 year, 2 terms.
Q. - - -	(IV.)	16	2 years, 1 term.
R. - - -	(IV.)	14	1 year, 2 terms.
S. - - -	(IV.)	15	3 years, 2 ..
T. - - -	(IV.)	15	3 .. 1 term.
U. - - -	(IV.)	13	2 terms.
V. - - -	(IV.)	15	1 year, 1 term.
W. - - -	(IV.)	17	1 .. 1 ..
X. - - -	(V.)	15	2 years, 2 terms.
Y. - - -	(IV.)	15	2 .. 1 term.
Z. - - -	(IV.)	13	2 .. 1 ..
A. - - -	(IV.)	15	2 terms.
B. - - -	(IV.)	14	1 year, 2 terms.
C. - - -	(IV.)	13	2 terms.
D. - - -	(IV.)	15	1 year, 2 terms.
E. - - -	(V.)	18	5 years, 2 ..

PROFESSOR ARTHUR SMITHELLS, B.Sc., F.R.S., Professor of Chemistry and Dean of the Faculty of Science at the University of Leeds.

(Evidence given October 21st, 1909.)

#### THE APPLICATION OF SCIENCE TO DOMESTIC WORK.

The witness stated that he was first brought into touch with Domestic Instruction when conducting a course of lectures in Chemistry in a High School for Girls.

For some years his interest in the subject was dormant, but soon after his appointment as Professor of Chemistry at Leeds, he was asked by the Yorkshire Training School of Cookery to express an opinion on the Science taught in their course of training for Cookery teachers, designed mainly for Elementary School work. This was really the beginning of his interest in Domestic Science.

The Science taught in Cookery schools was then of a very barren and unprofitable kind, and was looked upon as an extremely subordinate subject. Mainly, the students attended the schools to obtain proficiency of a practical kind in the household arts, but they were also instructed in something with the name of science, and attended lectures on the theory and practice of education. The science seemed to be extremely unsatisfactory, being of a perfectly formal and academic type.

Under the name of Hygiene that portion of science most closely related to household occupations was taught, often by persons who merely restated facts obtained from textbooks. The consequence was that these students knew nothing of any value about simple questions of science in the house. The witness drew up a memorandum of advice on the laboratory work and course of study, and an endeavour was made to put things on a better footing.

As regards his work at the University, the witness said that the students training as teachers in primary and Secondary Schools came to his laboratory for their instruction in Science. For a long time, hampered by precedent, the work there continued on the old lines, that is to say, it was not specialised at all for the teaching of children. When he went about inspecting schools he became more and more convinced that this formal Science was very futile. Chemistry and Physics, as ordinarily presented to schoolgirls, were not acceptable; they did not appeal to any logical faculty, nor to any feminine interest. On that ground Botany and Nature Study had always been more popular than other science subjects. The witness considered that the importance of Nature Study had been somewhat exaggerated by its advocates, and for some years past he had been trying to discover whether something could not be done to make Physics and Chemistry appeal to girls more than they did. These subjects were much more fundamental than Nature Study. Natural History was a very good beginning in Science for everyone, and was especially valuable for young children; but Physics was absolutely fundamental for scientific discipline, and Chemistry nearly as much. The difficulty lay in bringing them into connection with daily life. The attempt to do this was hampered by the extremely strong traditions in regard to the teaching of Science, and it was regarded almost as a degradation to teach it as something that might be useful.

The witness had been trying to devise a course of instruction in Chemistry and Physics intimately connected with household operations. The principal way in which he had endeavoured to impart his ideas was by means of Saturday classes for teachers; but he also had other classes of students of all kinds. These people had often attained a very considerable standard in Pure Science; but although some of them had been actually teaching in schools, they showed extraordinary ignorance in applying to practical things principles with which they were perfectly familiar in theory. As a matter of fact, this application of Science to everyday life was not a simple matter, but one which required a great deal of time and careful attention. Even the demonstrators themselves who helped in the work easily got into difficulties when dealing with something they had not thought of before. The topics chosen for illustration, instead of being abstract matters, were all things relating to daily life, and it was surprising how difficult it often was to get

to know anything about common things, as, for example, a hot-water apparatus, the difference between good and bad coal, &c.

The witness said he was frequently asked for a syllabus of the Domestic knowledge which should be worked into the Science teaching; but he had not felt that he could give much help in that way. A very good syllabus of Domestic Science for a girls' school was, however, contained in the Report of the British Association for 1908, and the course of training for teachers at King's College was also very good. A syllabus did not disclose how much there was behind all this work that escaped the ordinary training of science students. If such a syllabus were put before the ordinary science graduate he would think it was something quite within his capacity to teach. When, however, he came to do so, he would really be very much at sea. A syllabus, in fact, could give very little indication of the requirements in the training of a teacher.

#### THE TEACHING OF THE DOMESTIC ARTS.

Another aspect of the question was the purely Handicraft aspect. The witness had had an opportunity of seeing how good Cookery teaching could be without including a scientific element at all. He began with the idea that Domestic instruction might be levelled up by means of the introduction of enlightened science in connection with it, but he now knew also that the teaching of Domestic Arts *per se* might be made highly effective. How effective depended on the personality of the teacher. A good teacher could do an amazing amount by using the attractiveness of the subjects to get hold of the girls' interest. Half the apparent want of intelligence in certain girls was due to the fact that in classifying them so much importance was attached to purely intellectual and abstract things. Just as Handicraft was the means of bringing out the best in many boys, so Domestic instruction could be made to capture girls who would respond to no other kind of approach, and to develop them into capable, industrious, and reasonable beings. The witness was most profoundly impressed by the important educational value of both Handicraft and Housecraft. In schools for both boys and girls a great deal should be done on the practical side—not only in Science, but in every part of the curriculum—in order to awaken and develop the pupils' faculties.

A great many teachers were willing to take up the subject, and many headmistresses held the view that there should be a very strict correlation between Science and the Domestic Arts. They wanted to arrange the work so that each Science lesson was followed by a lesson in that particular portion of Domestic Work which bore upon the Science.

The witness did not believe it was possible to carry out such a plan at all fully. There was always the possibility, however,

of making the work done in the Cookery department relate generally to the Science that was being taught.

#### TEACHERS OF DOMESTIC ART AND SCIENCE.

The witness had come, during the past few years, into very close relations with those concerned in the Domestic Economy training, and had found that there was an undoubted tendency for the less intellectually competent to aspire to the teaching of Domestic Subjects. The reason for this seemed to be that it was not generally considered that any great intellectual attainments were needed for this work. Consequently, although in the ranks of Domestic Economy teachers excellent work was being done, it was a fact that, as a whole, but with many individual exceptions, these teachers were of a lower standard intellectually than the ordinary teachers. He did not think they were at all inferior in character, influence, or usefulness.

Having shared in the general change of opinions in regard to the position of practical subjects in the school curriculum, the witness was very anxious to see the status of domestic teachers improved.

He thought it desirable that the teacher of Housecraft should be on equal terms with all the other members of the school staff, and considered that this was a condition that might well be achieved. He did not see why for the sake of economy and probably efficiency the Domestic Economy teacher should not also teach Science. But whenever the suggestion was made that the Science mistress should equip herself to teach the Domestic Arts, the body of Domestic Arts teachers at once questioned the possibility of her being able to acquire the necessary efficiency. The best Cookery teacher was not necessarily the teacher of Science, and, in fact, in a large school it would no doubt be better to have the Science and the Domestic work taught by separate teachers; but it was almost indispensable that the teacher of Science should know sufficient Cookery to bring her Science into relation with that subject. At present there was an absolute want of contact between the Science and the Domestic teacher; the Science teachers as a rule had not even the amount of household knowledge of the ordinary woman.

#### SCIENCE LABORATORIES.

A Domestic Science laboratory should be as simple as possible. He found it served a useful purpose to have teachers in a laboratory of this kind, as they saw how unnecessary was all the extravagance common in school laboratories. Things could be often illustrated by means of a common glass bottle better than by a bought piece of apparatus.

At the Leeds High School there was a science laboratory and also a kitchen laboratory. The latter was merely a large

room in which were a cooking range and a series of benches or tables with small gas-cooking appliances. By this means it was possible for a number of girls to carry on a small culinary operation simultaneously. As regards the science laboratory the chief difficulty in designing it (a work in which the witness took part) was to avoid making it too elaborate. This was a fault to be found in laboratories designed for the teaching of the old kind of diluted University Science. It involved the building of absurdly expensive laboratories for the teaching of a little elementary Science.

#### DEGREES IN DOMESTIC SCIENCE.

At the Leeds University, in the Domestic Science laboratory, the students were not actually taught Cooking. This was rather out of the recognised sphere of the University, but the witness hoped that the teaching he had started was the thin end of the wedge, and that eventually a course in Domestic Subjects would be established on the lines of that at King's College. It was, he thought, only the financial difficulty that had prevented the establishment of a degree course in this subject. Five or six hundred pounds a year would be needed, and it would be necessary to allocate a laboratory expressly for the purpose. If the money necessary to establish the course could be found there would be no difficulty about getting the students.

The witness was not contemplating a degree for persons who would teach Domestic Subjects almost or quite exclusively. A University curriculum for teachers of this type was a long way off.

The witness said that when he had teachers training at the University who were not hampered by the Board of Education's requirements as to technical training, he could do something with them. But he was in despair about the ordinary King's scholar. Their three-year course of educational subjects with ordinary Science left no time for the specialised work. They needed another year. If for the formal sciences, now insisted upon for the ordinary degree, there could be substituted a more suitable range of science, the present amount of time would probably be quite sufficient.

The witness hoped that it would even be possible to include a certain amount of practical domestic work. At King's College exactly the same problem arose, but there a certain amount—some would say a quite insufficient amount—of practice in Domestic Arts was given.

*Note.*—With reference to the above evidence Professor Smithells writes, August 15th, 1912:—

"I have nothing ready-made to illustrate the way in which Domestic topics may be interwoven with Science teaching, but I may give one or two examples which will perhaps suffice to make my meaning clearer. In Physics the subject of heat is very fertile in this way. In developing the general principles of the Science I do not think much

is to be gained by the attempt to employ household utensils in place of the simple apparatus that is customary in schools, but additional illustrations may be introduced to show the applications of the principles in the household. It is easy, for example, to build up with the ordinary glass apparatus of a laboratory a very good working model of the hot-water system of a house, in which the circulation can be shown by colouring the water in the "boiler." According to my experience, the ordinary Science graduate has not the least idea of the system. The conditions for boiler explosions should, of course, be pointed out, and also such things as the air-logging of hot-water pipes and the use of air valves. Incidentally the blackening of walls by the dust-laden air currents that rise from hot pipes will be mentioned, also the similar blackening above gas flames, the use of baffling plates and canopies to prevent local blackening.

"Simmering" is a frequent operation in Cookery about which the vaguest ideas prevail. It should be dealt with experimentally and the reason for simmering rather than boiling discussed.

The different modes of applying heat in Cookery should be considered, and precise ideas given of boiling, steaming, stewing, roasting, baking, frying, grilling, &c. Many simple experiments will suggest themselves as soon as the teacher really tries to get at the facts and is not afraid to deal with actual food materials. For example, it is very instructive for a class to imbed a thermometer in some foodstuff such as a potato, then immerse the thing in boiling water for a few minutes and take it out, noting the temperature of the imbedded thermometer every minute. They are astonished to find the temperature rise after the thing has been taken out of the hot water, and so, I have found, are many teachers, both scientific and domestic, although the point is one of general importance in Cookery.

Rates of heating and rates of cooling of different liquids, and devices for cooling quickly, should be studied. It is very common to see intelligent people fretting over the things they are 'letting cool,' when by immersing the vessel in a stream of cold water and constantly stirring they might hasten the process four or five fold.

The expansion of gases leads materially to the consideration of ventilation, also to such things as the use of beaten-up eggs as raising agents, the making of puff pastry, &c. Many other illustrations might be given from the subject of heat. When once the point of view of household interest is taken, examples multiply with almost embarrassing profusion.

Chemistry in the same way may be brought more closely into touch with household matters. The chemistry of Cookery is, of course, a highly complex and little explored subject, and nothing is gained by burdening the pupils with lore about albuminoid bodies and their supposed transformations. I should like it to be clearly understood that I have never advocated the teaching of the chemistry of Cookery to people who are without a substantial knowledge of Science. But if we come to a subject like combustion or solution there are a great many matters of household interest, and yet simple enough, that are rarely touched upon. Why is one coal 'better' than another? Why is coke used in stoves and not often in fires? What are, and whence arise, the special virtues of anthracite? What are the right principles of construction of a grate? What is down-draught and how does it arise? What is the use of tall factory chimneys? What is the white smoke that rises from the coal on a newly-stoked fire? What are cinders, ashes, clinkers, &c., &c.?

In connection with lighting and heating by gas, the principles of burner construction should be illustrated and explained, and actual trials made of the amount of gas used in a flat flame and an incandescent burner. The gas pressure should be measured by a U tube on different storeys. The parts of a paraffin lamp should be examined

and their use illustrated, and the cause of lamp explosions demonstrated by warming paraffin in a flask and dropping in a light. The special dangers of petrol should be shown and the causes and extinction of household conflagrations illustrated and discussed.

"Solution leads to innumerable applications in relation to infusions, extracts, tinctures, &c. There is one thing only I will dwell upon, and that is the widespread ignorance, almost amounting to superstition, about cleansing processes, apart from ordinary washing. The way in which whitening and other powders and liquid polishes act, the nature of lacquers, &c.—these are left as mysteries."

And subsequently, under date September 3rd, 1912:—

"I certainly think a good deal of household illustration can be introduced into the Physics of girls beginning Science. In ideal teaching there should, of course, be a concordat between the teacher of Science and the teacher of Cookery. A short time ago I heard it affirmed that the secret of making a good rice pudding was to add some water to the milk. The whole point is obviously one of evaporation. Now it would be rather out of the path of a Physics teacher to deal with such a thing, yet the average Cookery teacher of to-day would probably never think of explaining the device rationally. If she did, she would naturally go on to consider covering the dish, the formation of skin, &c., and that is what one wants, but I do not think it can be expected of the Science teacher. The present trend of opinion will no doubt force Cookery teachers in Secondary Schools to learn more Science.

"The changes taking place in the cooking of meat and vegetables as a whole are complex and ill-understood, and little can be made of them yet for practical ends or scientific edification. But the changes undergone by individual substances such as sugar and starch, and such processes as the baking of bread and pastry, the making of infusions, preserving, canning, &c. are more manageable. The mistake our critics make is in thinking of Household Science as merely the chemistry of roast beef and cabbage. The only effective way I have found of converting sceptics is to have them in a class."

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Mr. F. G. SNOWBALL, Assistant Master at the King Edward VII. School, Lytham.

(*Evidence given December 20th, 1911.*)

KING EDWARD VII. SCHOOL, LYTHAM.

In answer to questions, the witness stated that this was an Endowed School receiving grants from the Board of Education but not from the Local Education Authority. It was quite new, having been opened only three years ago. The number of pupils at the present time was about 160—all boys. There were no boarders; but many of the boys came to the school each day from a distance of several miles, and a large proportion stayed to dinner and tea.

#### THE TEACHING OF HISTORY.

The witness was of opinion that History was a subject of considerable educational value, and that it was of special importance to secure its right teaching in the junior Forms.

The duty of the teacher in these Forms was, in the first place, to rouse an interest in the subject, and, in the second place, to create a background of knowledge into which the later teaching could be fitted. The biographical method usually adopted was, for several reasons, not satisfactory. The basis of the work should be sociological, and the most suitable way of presenting sociological facts to the younger pupils was to group them round some real or imaginary boy hero. In the witness' school no text-book was used in connection with History until just as the boys were leaving the junior school, but some care was taken to correlate the History and Literature.

The course adopted was as follows:—

In the First Form the teaching dealt first of all with primitive life in prehistoric times, a good deal of time being given to outdoor work. The school grounds consisted largely of sandhills, which afforded opportunities for digging pit dwellings and caves. Some of the boys became very keen on this work. They borrowed books dealing with the Stone Age, and endeavoured to make some of the things that were made by the men of that time, such as flint instruments, &c. In this way they realised something of the skill of these primitive men.

From prehistoric man they turned to early Egyptian life, not with the object of learning Egyptian history, but in order to gain an idea of the general progress of civilisation. Stress was laid on the manner in which the Egyptians learnt to read and write, on their methods of measuring and cultivating land, and on their religion and the influence of their environment upon it. Small models were made of Egyptian temples, shadoofs, ploughs, &c.

The subsequent stages dealt with Mesopotamia, Palestine in the time of Solomon, Phœnicia, Greece, and Rome, and the history of Europe in the Middle Ages and Modern Times; and were followed, in the upper school, by a four years' course of English history.

N.B.—A junior course of English History could be carried out on sociological lines and correlated with the Art and Manual work in a similar way.

#### THE CORRELATION OF HANDWORK WITH HISTORY.

The witness said that a great deal of the History teaching in the lower Forms of the school was based on practical methods and was closely correlated with the Art and Manual work. This necessitated a hearty co-operation between the History teacher and the teachers of Art and Handwork.

The History lesson itself did not include any Handwork, but time was given in the Art and Manual classes to work bearing on the History teaching, and a good deal of voluntary work was also done by the boys out of school hours. The interest roused



by this History work was found to be of considerable benefit in the Art and Manual Instruction.

A great variety of models could be made to illustrate the teaching of History, and it was not proposed that each successive set of boys should make exactly the same models as had been made by its predecessors. Future classes would have different series of models to make, until a fairly complete collection had been accumulated for illustrative purposes. When this had been done it would be sufficient for following generations to make perspective drawings of models already finished and to replace the least successful efforts of their predecessors.

It was the opinion of the Manual instructor that extreme accuracy in Handwork was of less importance than the development of the creative faculties. Great value attached to the making of models of large size. In connection with such models, the plan adopted was to divide the class into groups of 8 or 10 boys, and to pick out the best boys to act as foremen of the several sections. To each group was assigned a particular portion of the work. One particularly useful piece of work performed by one of the junior Forms (average age 11-12) was the construction of a model of a feudal castle, of solid wood, about 4 feet square. The boys had taken a great interest in this work, and it had been of invaluable assistance in giving them a vivid picture of mediæval life. The modelling work also helped to rouse the boys' interest in architecture; it was found, for example, that those who built models of monasteries and castles were keen on visiting places of architectural interest such as Furness Abbey.

Practical methods of teaching had proved of value in other subjects than History. In Geography, for instance, the boys had made contour relief maps of wood and plasticine, and a model artesian well, with the aid of plasticine and sand, while sand modelling was an essential part of the Geography course in the First Form. They also made the simpler pieces of apparatus required in Science.

The course of Handwork was carried throughout the four lower Forms of the school. It was not continued beyond the age of about 14; but the workshop was open at all times, and any boy could get permission from the master to work there out of school hours. Some took advantage of this during the dinner interval.

Drawing was taken throughout the school.

In the case of all the models, the boys had to draw plans, elevations, &c., to scale, before starting on the work itself.

A certain amount of Cardboard-modelling could be done by means of printed sheets on which the designs were worked out in colours. It had been found that the ordinary plain cardboard work required more time than could be spared.

The witness had not tried either plasticine or clay as a medium, except in connection with Geography. He did not

think they would be so suitable in History as wood or cardboard, except, perhaps, in modelling surface features as a setting for the wooden or cardboard models.

#### THE VALUE OF HANDWORK FOR BACKWARD BOYS.

The witness was of opinion that Handwork could with advantage be carried on beyond the age of 14 in the case of the more backward boys. This had been done in his school in a certain class with a large proportion of such boys at the bottom of the senior school. The pupils in that class did not seem to take the least interest in the ordinary History teaching; but they had shown great keenness in building a model of a monastery, and had afterwards written excellent essays on Monasticism. In connection with Geography also these boys had been quite unable to understand the principles of an artesian well until they had succeeded in making a model of one. In one or two particular cases it had been proved that Handwork had a very beneficial effect in bringing out the abilities of boys who could not be reached by the ordinary methods.

The Reverend T. C. WALTON, Headmaster of the  
Grammar School, Kirkham.

*(Evidence given July 7th, 1910.)*

#### THE KIRKHAM GRAMMAR SCHOOL.

The witness explained that this was a typical small Lancashire Grammar School, with about 60 pupils (all boys) from eight years of age upwards. The boys were mostly the sons of business or professional men. There were not at present many farmers' sons in the school, but their number was increasing as the curriculum was being made more attractive to them. About 80 per cent. of the pupils in the school had previously attended Elementary Schools, a fair number of them being Scholarship holders selected by open competition. The population of the ancient parish of Kirkham was only about 9,000, and the district around was not thickly populated, but a number of boys cycled in to school daily from the surrounding villages.

When the witness first went to the school, five years ago, he found it with a curriculum framed on the lines of the Public Schools. He felt that this was absolutely out of place in the centre of an agricultural district, and had therefore tried to introduce gradually a more suitable course of work, in which he had been aided by valuable suggestions from H.M. Inspector, Mr. Dymond. A course of Nature Study, running right through the school, was now a fundamental part of the curriculum, and a good deal of Handwork was done as well. At the same time, as there were always three or four boys in the school preparing for the Universities, it was necessary to keep up a fairly strong classical side. It was hoped that, with a larger proportion of

still further at the top of the school the agricultural bias of the curriculum ; but it was difficult to get these boys to stay long enough owing to the belief that if they were to become practical farmers they must start on the farm at the age of 15 or 16. They would probably be prepared to attend for half time after this age ; but the witness was strongly opposed to such a plan.

The witness did not think that the ordinary school work had suffered in consequence of the practical bent given to the curriculum. On the contrary, he believed that his staff were unanimous in the opinion that the practical side of the work was of great value.

#### NATURE STUDY.

One of the first steps taken by the witness in remodelling the curriculum of the school was to substitute for the Science work as previously taught a course of Nature Study which ran right through the school. Every boy, from the lowest to the highest Form (with some exceptions in the Sixth Form), now had his three hours a week of Nature Study, partly practical and partly theoretical. All the Science work done in the school was now incorporated in this Nature Study course, and all of it was given an agricultural bias. The time was divided into three lessons of one hour each, and was mapped out according to the season into outdoor and indoor work. Sometimes the boys spent as much as two hours out of the three in the country round the school.

Only a comparatively small amount of Gardening was done at the school at present, but larger buildings were now being erected, and when the school moved into them it would have at least  $1\frac{1}{2}$  acres of land to be used as experimental plots. By this means the agricultural side of the school would be developed, but not exclusively for the benefit of farmers' sons. The work would be useful also for those who would enter on professional life. For this reason all the boys would continue to have their three hours a week of Nature Study.

This Nature Study work had had an immense influence on the boys. They were less handicapped than they were formerly ; the things they learnt were, in a sense, useful and interesting, and they went to their other lessons with a much greater zest than before. The witness believed there was not a single boy in his school who was not glad to get back to school again when the holidays were over.

#### HANDICRAFT.

The witness said that a workshop had been built at the school, and all the boys, except those in the VIth Form spent one hour each week in it. The youngest ones did no Manual work, but made drawings of the simple models. At 11 years of age they began to do a little Geometrical work with cardboard, and also to learn the use of the tools in the workshop.

As regards the character of the work done, the witness stated that the exercises did not take the form of constructing

useful things, but were restricted to such processes as the making of joints. Once a year, however, a prize was offered for the construction of some useful article. The witness was of opinion that by teaching the processes rather than the making of actual objects, more accurate and less mechanical work was obtained. Further, the boys acquired knowledge which they could apply to the making of any number of objects, whereas by the other method they would only be able to make just those articles which they had actually been taught to make in class. There was no lack of interest on the part of the boys, for they knew that at the end of the year they would be called upon to apply the principles they had learnt to the making of some definite article. Among the objects so made were pieces of apparatus for the botanical and physical laboratories, picture frames, cases for exhibits, &c., and it was found that the boys were quite capable of making things of this kind without further help, once they had mastered the various processes involved.

The Handwork was treated as part of the school course, and was carefully correlated with the other work, especially with the Science and Drawing. A boy was not allowed to make anything in the workshop until he had prepared his drawing. Care was taken to prevent the boys regarding the Manual work as something outside the school. Even the little boys went to see the older ones working in the workshop, and looked forward with pleasure to the time when they could take part in that work.

#### TEACHING STAFF.

The teacher of Science, in addition to his scientific training, had spent four years on a farm. He taught all the Science and Nature Study throughout the school; he also took the Manual work, though he had had no experience of this work when he started.

The witness did not think it desirable that Handwork should be taught in Secondary Schools by an artisan. He had insisted from the first on its being taken by a member of the regular staff, and had thus been able to link up the Manual Instruction with the other work of the school all the way through.

#### EXAMINATIONS.

The Science syllabus was not such as to allow of preparation for examinations, so these had been dropped in this subject, except in the case of the bursars, who took Botany in the Preliminary Certificate Examination, the schedule of which suited the School's course exactly. The whole of the Sixth Form, however, took the Cambridge Senior Local, each year, without Science.

The witness was of opinion that an examination which consisted entirely of paper work was not a suitable test of a school where so much attention was paid to practical work. Under

and the boys got no credit for it when they entered for examinations. On the other hand, it was, of course, reported on by the Board of Education's Inspector, and the school also sent exhibits to the Royal Agricultural Show at Liverpool in 1910.

*Note.*—With reference to the above evidence, which was given in July 1910, Mr. Walton writes, 7th November 1912:—

“Owing to our removal to a new site and new buildings, the scheme of Practical Work in experimental plots and gardening is now in full operation, and has received high commendation from H.M. Inspector. The numbers of the school have increased by 100 per cent. in 7 years, during 6 years of which the scheme has been gradually brought into operation.”

Dr. ALBERT WILMORE, Headmaster of the Secondary  
Day School, Colne.

*(Evidence given July 7th, 1910.)*

COLNE SECONDARY DAY SCHOOL.

The witness stated that (including bursars) there were about 140 pupils (of whom more than half were girls) in his School. They entered at about 11 or 12 years of age, and a good proportion remained until 16 or 17; very few except bursars stayed till 18. A fair number of the boys left at about 14 and went to other Schools.

#### THE VALUE OF PRACTICAL WORK.

The witness was of opinion that throughout school life, and not merely in the earlier years, there should be opportunities of dealing with things. This need not necessarily take the form of what is generally termed Handicraft; but in Mathematics, Geography, and even History, attention should be given to the underlying things. Such methods did not lessen the power of pupils to tackle the more literary side of School work. For instance, in examinations, students who had had practical training were able to hold their own in Matriculation, Scholarship, and other examinations.

In the witness's School, practical methods were carried right through the School course, and he had not the slightest doubt that the methods which had been adopted had greatly helped to improve the capacities of the pupils. He believed that his staff were in complete agreement with him in this matter.

#### HANDCRAFT.

Handicraft, in the more limited sense, was too commonly treated as a thing apart from the ordinary school life. This was a difficulty that should be carefully watched. It was largely due to the fact that Manual Instructors usually regarded

themselves as somewhat detached from the general work of the school. The witness had tried to get over this, as it was in his view important that the handwork should all be carefully correlated with the other work. He therefore formed subsidiary committees of the school staff, on which the Manual Instructor was included, and asked them to prepare correlated schemes of work. Everything possible was done to make the Manual Instructors feel that they were part of the school.

The witness was decidedly of opinion (as were also his Manual Instructors) that Handcraft was (as a rule) more valuable in the earlier than the later years of school life, because the younger pupils could not grasp abstract principles so well as the older ones, while the making of things proved a great stimulus to them, especially to those whose parents were engaged in practical work.

All the practical work should as far as possible illustrate some principle. Otherwise there was a danger of the schools becoming mere Trade Schools. It was not desirable to set pupils to make things simply for the sake of making them. On the contrary the practical work should always be subservient to the teaching of principles. At the same time, slovenly work should not be permitted; it was better to do less and insist upon thoroughness.

#### (a) *Boys.*

In the witness's school a three years' course has been adopted in Wood- and Metal-work, but other materials were brought in. For instance, to illustrate the work in Physics, the class had made a pump, involving the use of glass and leather, and had then mounted it on a wooden stand. Two hours a week, including a little preliminary Drawing, were devoted to this course during the three years.

The Manual Instructor was asked always to bear in mind that the tools used should illustrate some mechanical principle.

Considerable importance was attached to bringing the Manual work into connection with the teaching of Geography. There was a special geographical laboratory in the school, and boys in the Manual Instruction class were very often sent there to locate on the maps, or to ascertain in other ways, where the timber they were using had come from.

#### (b) *Girls.*

The girls had a concentric course of Needlework, Cookery, and possibly Laundry-work, during the first three years of their School life. The work was arranged by discussion between the senior Mistress, the domestic instructress, and the witness.

The writing out of recipes was reduced to a minimum, and the aim of the work was to teach the science underlying the things done. The pupils had to master the principles of

Cookery, and were encouraged to make plain rather than fancy dishes, and to take them home so that their parents could see that they were making something useful.

In Cookery and Laundry work the girls always arranged everything and cleared away. Occasionally the pupils cooked a school dinner, there being a good many country children attending the school, who could not go home in the middle of the day. On such occasions the pupils not only cooked the dinner but planned it all, with the help and supervision of the Mistress, bought the materials, served it up, and charged for it.

#### MATHEMATICS AND SCIENCE.

The Mathematical work was made as practical as possible throughout, by means of measurement, weighing, &c., and was correlated with the Physics. Similarly, in Physics and Chemistry, the younger pupils made their own cubes of wood, their own levers and the stands for them, while the older ones made thermometers, galvanometers (except the turning of the wood), voltaic cells, funnel stands, &c.

Care was taken to correlate the Geometrical Drawing with Mathematics. A small committee was appointed in connection with the matter, including the Art Master, the Mathematics and Physics Master, the Chemistry Master, and the Manual Instructors, in addition to the witness himself.

#### GEOGRAPHY AND HISTORY.

Importance was attached to the practical sides of Geography and History, and the two subjects were correlated as far as possible.

For Geography the school had a tolerably good collection of things to illustrate the teaching, and prizes were given to encourage collecting by the pupils. Specimens brought to the school were labelled and discussed. The pupils made their own observations on the climate; one boy, for example, recorded which way the wind was blowing, and another the state of the barometer.

School excursions were arranged to study Geography in the field, when the pupils made such experiments as finding the boiling point on top of a hill, reading the barometer at different levels, and made observations on the relation between the scenery and the nature of the rocks in a district. A little very elementary, but practical, land surveying was done, the pupils noting the relative bearing of a few prominent points, and entering them on contour maps which they had themselves prepared.

In History the pupils were taken to see interesting places, such as the Norman church at Colne, the Abbeys at Bolton and

Sawley, Skipton Castle, and Roman and British camps. They also studied actual specimens of British coins, and old prints and books.

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## (ii) Women.

Miss S. A. BURSTALL, Headmistress of the Manchester High School.

*Note.*—The witness gave evidence before the Committee on December 9th, 1909, as to the work done in Domestic Subjects in the Manchester High School. Since then the work in these subjects has undergone considerable changes in character and extent, due in part to its natural development, but in greater part to the establishment of a Housecraft Certificate by the Joint Matriculation Board of the Northern Universities which examines and inspects the school. The summary of the witness's evidence given on that occasion would be thus largely inapplicable to present conditions. In these circumstances the summary has been re-written in parts, and may be taken as referring to the work of the school as it was in November 1912.

### THE MANCHESTER HIGH SCHOOL FOR GIRLS.

There were in the Manchester High School nearly 600 girls, representing a very great variety of types. About 15 or more girls annually went to the Universities out of about 150 or more leaving. But the population was so migratory that there was a large leaving average for the size of the school, and whereas some girls remained at the school from 8 to 12 years, others left after less than 4 years. The number leaving was not therefore a very good guide to the proportion going to the University. The number of girls leaving before the end of the course was markedly diminishing; but there would always be a certain number leaving for boarding schools in the south or abroad. There were more than 200 girls over 12 years of age in the forms definitely preparing for College by a course extending over 6 or 7 years.

### NEEDLEWORK.

The witness had always felt deeply the value of Sewing, both on general and on practical grounds. It had always been included in the school curriculum, from 1874 when the school began, till now. There is a course of Dressmaking at the end. Needlework should not mean simply fine stitching, nor, on the other hand, the working of specimens, but should comprise a course on common-sense lines. It appeared very much to women, and, if connected with the Art instruction, became of real educational value. It was not a compulsory subject during the later years of the course in the Manchester High School; but those who took it had an hour a week up to about the age of 12, and after that 1½ a week for two years or more.



## HOUSEWIFERY.

Witness felt that the solution of the problem of Domestic Instruction depended on the type of the girls' homes, as to how far the schoolgirl was likely to help with domestic work at home. In this respect there was great variety in the case of the Manchester High School.

*(a) The Adaptation of Science to Domestic Work.*

In the first place, there were the girls going to college and to professions. It was difficult to see how to find time for Domestic work (except Sewing) in their case. But all these girls took Practical Science from about the age of 12, and it was thought that if this science was coloured by reference to the needs of the home the girls would learn in school the principles of Domestic work, while in Northern England universally the home itself might be relied upon to give practice in the utilisation of those principles. The day schools might do much more than at present to encourage girls to do practical Domestic work in their own home. The original intention of the Saturday morning holiday in girls' schools was to enable the girls to go to market with their mothers, and generally to take part in the household duties. It was desirable that the teachers should get into close touch with the home life of their pupils, and endeavour to get the practical side of Domestic work done in the home during the week end, as, for example, by preparing a Sunday meal. As a matter of fact, in the north country girls of most social types did some household work. The school should give the principles, and make sure that the girls were getting some practical work at home during the week, and certainly during the holidays. The whole idea of the high school was the close and intimate relation between home and school. That was why Domestic work was not in the curriculum originally, when such schools began 30 or 40 years ago: it was supposed that this side of education would receive attention in the home.

It was essential to create the right attitude of mind towards the subject. Then it would not matter so much if the college girl never received Cookery and Laundry instruction in the school at all. She would very soon learn how to keep house if it were put into her mind that it was the right thing to do.

In any case, these college girls should all go through a definite course of Science, and it was believed to be both possible and valuable to illustrate the principles of elementary Chemistry and Physics by examples from Domestic work. This was already done successfully in the case of the more backward type of girls, and it was therefore thought that it could be done in the case of the others.

*(b) Definite Courses of Housewifery.*

Besides the college girls there were those who would earn their own living as teachers in Public Elementary Schools, secretaries, &c., and also those who would remain at home. From statistics it was known that quite half the girls (say 55 per cent.) in the Manchester High School stayed at home; this included some who were trained to earn their living, but did not actually do so. These home girls did need a Housewifery course at the end of their schooling, and they were ready to stay longer at school in order to get it. Before a post-school course of this kind was introduced many girls left at 15 or 16, not because they could not afford to stay, but because their parents thought that as they were not going to be teachers there was no need for them to remain. A Housewifery department was developed to meet that need, and a course was established in which the girls devoted half their time to Housewifery, and half to Literature, French, and other school subjects. Thus, while continuing the general education and moral training of the school, the girls were given a practical reason for staying. Naturally the success of such a course depended to a very considerable extent on the teachers in charge of it. The girls enjoyed this course. It was supposed to be taken at the age 16-18, but very often it was 15-17, the age depending on place in school; the course corresponds with the lower and upper fifth forms. There were about 50 girls in this course in the autumn of 1912.

No part of the course was wholly technical and practical; even in the second year a little more than a third of the time was given to general education. It was most important to continue the general education, and every teacher of Domestic work should be able to take some general work as well. For purely technical work and more specialized training from 18 years of age the girls in Manchester should go to the School of Domestic Economy.

It would be quite impossible to make such a course compulsory even for those girls who were going to stay at home. Some mothers said they did not want their girls to go through the Housewifery division, because they could teach them their Domestic work at home. Such girls simply went on with their general education, including in all cases Science, and often took rather an "elegant" course, with extra Music and Drawing, and so forth. Their parents objected to paying fees for what they considered they could teach them at home. The Science, however, could be, and was, enforced, and it was hoped by this means to equip the girls much better for home duties even if they did no practical work in the school. Even in the Housewifery course itself it was not possible to make Laundry-work compulsory. Some parents drew the line at Laundry, and it did not do to fight the parents' wishes too much: there was enough difficulty over the Cookery.

In the Housewifery course all the subjects were commenced at once. Cookery, Dressmaking, Hygiene, and Laundry-work (when taken) were all introduced together at the beginning of the two years' course. There were, however, certain girls who had preliminary training in Cookery for a year in the Upper IV. Form. The Arithmetic, and, where possible, the Geography and History was in part adapted and correlated with Domestic teaching, *e.g.*, household Arithmetic, Civics, and the Geography of food products. Very close co-operation existed between the several teachers. The whole course has become much more complete and thorough under the influence of the establishment of a Housecraft Certificate by the Joint Matriculation Board of the Northern Universities. The girls have sat for this at the end of their two years of study, and have had some success, especially in the technical part of the examination in Cookery, Laundry, and Housewifery. The general part of the examination includes English, Arithmetic, History (Civics with us), Geography, a foreign language, either French or German, and Science. The two parts can be taken in separate years, and if the school desires, the general part could be taken before beginning the Domestic Arts group. This, however, we should not wish to do. We find a two years' course better for all sections. Cookery is compulsory, and two of the four options, Laundry, Housewifery, Needlework (with some Art work), and Hygiene (with some elementary Biology). The certificate is now accepted for entrance to several of the Training Colleges for Domestic Economy.

Some of the girls in this department became teachers; but the development of the Housewifery department was somewhat retarded by the fact that at present there was no career in it for the ordinary girl who had to earn her living, unless she was going to be a teacher of Domestic Arts. However, girls who intended to be nurses later did well to take the course, as did a few who later took the (Norland) Nurses' training.

There was evidence that the course was of immediate practical value; girls sometimes took part of the Cooking in their own homes even while still at school in the course. It was, however, an unfortunate circumstance that many girls in general did not like housework and did not like staying at home. No doubt this was partly due to the fact that they were not paid for what they did at home.

For the last two years the Governors have rented a country cottage which they have furnished to accommodate 2 mistresses and 8 girls. Here practical Housewifery is learnt at week ends and holidays, the girls doing all the work. They pay for their food, part of which they cook at school in the lessons and take with them. Sometimes parties of girls not in the Housewifery department visit the cottage.

## SCIENCE.

Science was taken all through the School; even the very little girls had as much as could be given them. Elementary Physics and practical Biology commenced at 11. So the children had some practical work from the moment they entered the school.

We hope that our problem of relating Science to Domestic Arts has now been solved for our purposes by joint action on the part of a Science Mistress (Cambridge Tripos) who knows some Housewifery, and a Domestic Arts Mistress who knows some Science. We use the syllabus of the Joint Matriculation Board.

Girls who have done a full course of Physics and some elementary Chemistry find this very valuable in their Housewifery work. The forms from which most of the girls taking the course come have a special set of Science lessons leading up to the Domestic Science.

## THE INTEREST OF THE PARENTS.

No definite measure, such as the issue of circulars, had yet been taken to make parents acquainted with the views of the school on the question of Domestic work; but much interest was shown by individuals, and parents now (November 1912) had formed the habit of thinking out beforehand their daughters' course of study; some entered girls from other schools at 15 and 16 years of age for the course. The Housecraft Certificate had done much to arouse interest among parents and older pupils. So also had the building of a new large Training College for Domestic Arts by the Local Authority in Manchester.

## SOCIAL ASPECT OF DOMESTIC WORK.

Domestic work was not used largely as a means of increasing the corporate and social life of the School. Still the girls helped in connection with school parties and such matters. In the winter the girls made clothing and food for the poor. It would be a good thing to do a great deal more in this direction, though, no doubt, in social service the homes and churches could play a more important part in the case of girls than with boys. In the case of any great distress, mobilisation of territorial, or other special circumstances, an attempt would be made to get the girls to give some real help. The Housewifery Department has developed a strong sense of corporate unity and pride of late years, aided undoubtedly by the institution of the Housecraft Certificate.

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Miss J. F. DOVE, M.A., late Headmistress of Wycombe Abbey School, Bucks.

(*Evidence given September 30th, 1909.*)

#### PRACTICAL WORK AND HOUSECRAFT.

The witness was of opinion that practical work was essential to all true education, but she would be sorry to confine practical work to a mere course of Domestic Economy. Domestic instruction was necessary in a primary school, but not necessary in a First Grade Secondary School. The time required to perfect the various operations was out of proportion to the amount of training that could be gained from them. The intelligence required cultivation by means of practical work, but not necessarily this particular form of practical work. If the intelligence of Secondary School girls were cultivated in whatever way was considered the best, they would be able to apply their trained intelligence to Domestic work afterwards. It was a waste of time to attempt the teaching of Housecraft in a school which kept its pupils for only about three years; the time was precious, and it was therefore necessary to develop the faculties by a method that took less time.

Though it was most desirable that girls should understand Housecraft, it was not the function of the Higher Grade of Secondary School to teach it. It certainly was the function of the school by means of Handwork of some kind to develop the girls' intelligence: but the facility they acquired in school they should apply to Housecraft afterwards. As a matter of fact that was what the girls did; they left school, and then when they began to need a knowledge of Housecraft, went to one of the schools of Domestic Science, of which there were a number in existence. Their facility in Handwork acquired at school enabled them to pick up the Domestic work quickly.

Quite half the girls who left the witness' school attended a Domestic course of some kind afterwards, and others had mothers at home who could train them. The majority got Housecraft instruction in some way or other. The school holidays also were long, the terms lasting for only twelve weeks. There was no reason why the girls should not do Domestic work during the holidays.

In answer to questions, witness said that pupils came to Wycombe Abbey School at the age of about 13 or 14. The majority of them had not been to any school before. They mostly came from country homes where they had done nothing, with the consequence that they were often clumsy and stupid. Generally they could read, and most of them had learnt to "chatter" French.

## PRACTICAL WORK IN WYCOMBE ABBEY SCHOOL.

(a) *Science.*

The witness was of opinion that Physics and Chemistry were the most important branches of Science. They were so mixed up with one another that it was difficult to express an opinion as to whether one had more educational value than the other. Girls on first entering the school took some easier form of Science, such as elementary Botany and Physical Geography, going on to elementary Chemistry, Physics, and Heat. What they learnt in the Science lessons would prepare them to take hold of the scientific side of Housecraft. A good training in Physics and Chemistry provided a splendid foundation for Domestic work of all kinds.

All the Science work was carried on from the practical point of view. The girls did things for themselves in the laboratory; there was very little in the way of merely seeing things done.

(b) *Manual Occupations.*

To the Science work it was desirable to add some definite handwork. In Wycombe Abbey School the school hours were 44 per week; but no girl under any circumstances was allowed to spend more than six hours a day upon definite head-work. The rest of the time was spent upon various occupations (in which the parents had some choice), such as piano or violin playing, Singing, Gymnastics, Drawing, Plain and Art Needlework, Bookbinding, Carpentry, and Gardening. Of these subjects, every girl took both plain Needlework and Gymnastics. In addition, play was organised in a scientific manner. Thus, there was a great variety of occupations open to the girls, and generally something was found to suit each girl, and in this way every girl acquired some kind of manual facility.

The girls went to the workshop, bindery and garden, in batches of six or eight, and it took a fortnight at the commencement of the school year to fit in all the different lessons and piano and violin practice.

A great number of the girls took Bookbinding. This was a very useful method of teaching Handwork, owing to the great neatness, accuracy and artistic skill required. It was taken in some girls' schools right through the school from the age of 9 upwards, and met with great success.

Many girls took Carpentry, to which the equivalent of about an hour a week was given; this work gave the girls a great amount of resourcefulness and ingenuity; but it was in the exactitude it taught that its chief educative value lay. Sloyd work was done in the school for many years; but this was given up because so much of the time was spent in "polishing up."

It might be made very useful, however, if more adapted to the life of this country.

For gardening, 107 gardens were provided, but the subject was so popular that in many cases a garden had to be shared by two or more girls. To some extent Gardening was taught scientifically and linked up with Nature Study. The teacher of this subject was one of the ordinary members of the staff; she had been specially trained in Gardening. She took six or seven girls at a time, and as there were about 150 pupils in this subject the work took up her whole time. The time devoted to the subject varied, some girls giving three-quarters of an hour a week, some an hour and a half, and some two hours and a half. Different girls had different needs.

Not all the girls took Drawing. The witness considered that in the preparatory school all ought to take it, but that after 14 only those should continue it whose parents wished it and who had a taste in that direction.

A scheme of Handwork of the kind adopted in this school necessarily involved a large staff of teachers. There were special teachers for Gymnastics, Dancing, Gardening, Book-binding, Art, Drawing and Carpentry, and there were separate teachers for Plain and Art Needlework. There was also a games' mistress and a large staff of music mistresses.

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Miss L. M. FAITHFUL, Principal of the Ladies' College,  
Cheltenham.

*(Evidence given November 10th, 1909.)*

#### HANDWORK IN GIRLS' SECONDARY SCHOOLS.

The witness was of opinion that it was desirable that girls should do Handwork of some kind right through the school course; Handwork, as an educational principle, was very necessary for young children. In a school like the Cheltenham Ladies College, however, a great deal of it was not required, as its place is taken by other kinds of physical activity. The school hours in the Junior School were from 9 till 12.30, and above this till 1 p.m., with a break of 20 minutes. There was no afternoon session except in the middle school, where the girls attended one afternoon each week; but generally on this afternoon they only did extras, such as Drawing, &c. There was little regular teaching on Saturday mornings.

In reply to a question witness said that it was found a sound general principle to restrict formal lessons to the morning.

Calisthenics were taken every morning, and frequent changes of classroom took place. So there was no monotony. It had also to be noted that the girls did Needlework at home, and that a good many learnt Music, which they practised at home.

The home, in fact, could play an important part in the development of Handwork, provided enough liberty was left to the home. By far the greater number of the girls, however, were boarders. These did afternoon preparation, not in school, but in the boarding houses; but the work they did in this way was only equivalent to what the day girls were supposed to do at home. They went to the playing fields in the afternoon and afterwards had from 2 to 3 hours preparation, generally from about 4.30 to 6.30. They then had their evening meal, after which there was Reading, Needlework, Singing, and Dancing.

The age of leaving the kindergarten attached to the Cheltenham Ladies College was 7 to 7½. From 7 to 11 the children remained in the lower school, where they took Drawing and Needlework as part of their regular curriculum. Clay-modelling was not continued beyond the kindergarten; where a good deal of Brush-work and Basket-work were done. In the Junior School, Drawing was compulsory, and Nature Study or Botany—also class Singing made a break in the ordinary lessons. The witness did not find that children suffered in any way from dulness in the lower school owing to the change from kindergarten methods. On the contrary, she thought these little children usually had a very strong sense of dignity and of the need for doing proper lessons. The most delightful part of the school in which to teach anything at all was the 1st class of the Junior School; and from 8 to 11 the children were very un-self-conscious, unspoilt, very active and energetic, and extremely keen.

There was no provision in the regular curriculum of the middle school for practice in Handwork, with the exception of that provided under a new arrangement by which Science work was started in the middle school. Girls now began Science the moment they entered the middle school—either Botany, Physics, or Chemistry—and it was carried right through the middle school and the upper school without a break. During the whole of the time laboratory work was done as part of the Science. Class Singing was continued as part of the curriculum.

Drawing and Needlework were compulsory subjects in the lower school and counted as extras in the middle school. Drawing included a great deal of pattern-making, together with various forms of handwork, gesso-work, leather-work, &c.

It would therefore be seen that manipulative work was done from the kindergarten to the top of the school, but that in the middle and upper school it was practically restricted to laboratory work in connection with the Science.

It should be mentioned that all the girls took Calisthenics, and that in addition Gymnastics might be taken as an extra. The school possessed good playing fields, and a good deal was done in the way of games, as for example, tennis, hockey, cricket; while swimming also was taught.



A certain number of crafts were taught in the College as extras, namely, Wood-carving, Bookbinding, and Enamelling.

The younger children however were not recommended to take these subjects. A subject which was considered important, was a new form of Writing ("reed writing"). This was taught with a view both to give the girls a craft they could understand and also to improve their general writing. This writing was done with the old reed pen or a quill, not split, and taught an entirely different method of getting the broad and fine strokes. From the point of view of craft it was quite the most suitable thing for girls of this class, because it improved their whole handwriting, and gave them an opportunity of learning how to make a beautiful book. One girl with special aptitude went from the school to London to learn the whole craft, and learnt it in about three months. It was a subject which gave a great amount of scope for originality.

#### DOMESTIC INSTRUCTION AND SCIENCE.

##### (a) *The Place for Domestic Work.*

Witness was of opinion that the teaching of the Domestic Science and Arts, and the application of the Science to the Arts, were best taken as a post-school course, or after the age of 16 in the upper school, when girls might reasonably specialise, and not during the ordinary work of the Middle School. It was more possible and also more advisable to do it in this way, because with the crowded curriculum necessary in Secondary Schools it was impracticable to introduce such subjects as Domestic Science, with practical Cookery, Laundry-work, or Housewifery, at an early point in the school career. These subjects, if taken at all, wanted rather a long time. Half an hour was no good for Cookery; a period of at least an hour and a half, and possibly two hours, was needed for a lesson in this subject. This amount of time could certainly not be spared from the ordinary work of the lower forms, where it was necessary to have rather a full curriculum in order to discover the child's capacities and enable her to develop her powers.

Witness therefore considered it desirable to commence the Domestic course at about the age of 16. She was also of opinion that it should not be compulsory, but alternative to other work.

##### (b) *The Importance of Science.*

Witness considered that Science was one of the most essential subjects in the Secondary School. Her view was that in the earlier part of school life Science should be taught as Pure Science, without any definite application to domestic matters. Girls should certainly have in the middle school (*i.e.*, from 11 to 15) a first year of Chemistry, and a first year of Physics, and

in the upper school they should have either a second year of Chemistry or a second year of Physics. This would enable them to acquire all the preliminary knowledge needed for their Domestic Science course, and to take everything necessary in the kitchen laboratory work without difficulty.

It was essential that the girls should have done some Pure Science in the lower part of the school, before the point at which correlation between the Science and the Domestic work was desirable. Otherwise they came to look upon the Science from a purely utilitarian point of view, as being important only in so far as it bore upon the Domestic work. That was an entirely wrong idea to encourage. It was therefore necessary to let the children first learn Physics and Chemistry for the sake of scientific methods, and then to apply the principles they had learnt to the Domestic work.

(c) *Correlation between Science and Domestic Work.*

It was essential that the Science and the Domestic Instruction should be brought much more closely together; and the teacher of Pure Science should be trained in Domestic Science so as to be able to take both. There ought not to be separate teachers for these subjects. Domestic Science should be made part and parcel of the Science teaching.

The movement to bring about greater correlation between Domestic work and Science was already having its effect on the teachers. Teachers of Pure Science were becoming much more interested in the whole question of Domestic Science, which hitherto they had looked upon with a good deal of contempt.

It was important to have a laboratory in the Cookery room, or else to teach the Cookery in the laboratory. It was so necessary to have everything at hand, and to be able to see everything going on. Witness was very strongly opposed to the idea that it was a good thing for the Cookery class to cook the school dinner. This was absolutely contrary to the proper methods; it was neither systematic nor progressive; and was most dangerous to the proper teaching of Household Economics. The range of dishes suitable for these dinners limited the teaching.

(d) *The Effect of Examinations on Domestic Instruction.*

A girl desiring to take Domestic Science rather as a special subject would probably expect to take an examination at the end of her school course which included some Domestic Science. Witness was looking forward to the possible recognition of this subject as an academic subject for which a diploma could be given. In that case, just as now a girl looked forward to matriculation, or some other examination of that sort, she might look forward to taking an examination in which Domestic Science was included. Since it was desirable some girls should receive

instruction in Domestic Science, that subject should be recognised in examinations. Without such recognition it tended of course to become neglected, and the best intellects among the pupils would not take the Domestic course. So long as the Universities did not recognise the subject by diplomas, so long would there be difficulty in getting the best girls to take it up, because there was no practical gain in it.

#### THE COURSE OF DOMESTIC SCIENCE AT CHELTENHAM LADIES' COLLEGE.

The Cheltenham Ladies College had a double syllabus of Domestic Science, one for girls who would proceed to the King's College course, University of London, and to professional life, and the other for those staying at home at the end of their school life, of whom there were an immense number, and who did not require so hard a course. These syllabuses differed in the Chemistry and Physics, and a little also in the kitchen laboratory course. The difference was not due to the fact that girls intending to stay at home left at an earlier age. These girls did not necessarily leave till 17 or 17½. It was simply because they were going home, and, not having in the great majority of cases to earn their own living, were not ambitious to take examinations. They wished for an easier course than that which the examinations demanded, and the course was therefore weakened a little for them on the Science side. Most girls were very keenly interested in the Domestic Science. Many of them, however, entered upon the Domestic course with the idea that it was an easy option, and were surprised when they found the Science so much harder than they expected. This difficulty it was hoped would be surmounted when the revised Science curriculum had ensured an elementary knowledge of Physics and Chemistry for all pupils.

The course lasted a year. No girls entered it under the age of 16. They did not, however, necessarily leave school at 17 on the completion of this one year's course. Past pupils of the College were allowed to return for the Domestic Science course.

There was evidence already that the course was thoroughly useful to the girls. Some of the parents were much pleased with the knowledge the girls had obtained and were able to use.

#### THE TRAINING OF TEACHERS.

Witness believed that some of her pupils were looking forward to becoming teachers of Domestic Science. If they wanted to become teachers in Secondary Schools she would advise them to go to London and take a course at King's College for two years. Two years would be sufficient for a girl who had taken a first year of Domestic Science on the new lines

at school. Some schools were quite capable of providing this. In order to enter King's College, a girl must have done work to the standard of matriculation. Although the London matriculation itself was not insisted upon, practically it was necessary to have taken the matriculation course or its equivalent in Chemistry and Physics.

*Note.*—With reference to the above evidence, which was given in November 1909, Miss Faithfull writes, November 14th, 1912.

“ Since giving the evidence, Book-binding has been omitted from our curriculum, as it was felt that this was not suitable as a course for school girls, and more attention is now given to Embroidery, which is connected with the Art Department. This Department has been entirely reorganised during the last two years, and a systematic course of instruction, beginning with Design, and proceeding with Drawing and Painting of simple natural forms, objects, memory drawing, imaginative drawing, drawing from the cast, life classes, and outdoor sketching. Every encouragement is given to the girls in their Embroidery and Art work to use their own designs, and the teaching of Writing is also put into the hands of the Art staff, and correlated with the rest of the work in that Department.”

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Miss IDA FREUND, Staff Lecturer in Natural Sciences at  
Newnham College, Cambridge.

(*Evidence given November 15th, 1911.*)

### THE NEED FOR DOMESTIC TEACHING IN SECONDARY SCHOOLS.

The witness was in favour of introducing Domestic teaching into all girls' schools. It was of the utmost importance that all girls, whether they were going out to earn their living or were going to live at home, should have a knowledge of Domestic work, and this knowledge, under modern conditions, they were not likely to get in their own homes.

### METHODS OF TEACHING DOMESTIC WORK.

#### (a) *As a Craft.*

The witness was of opinion that in Domestic instruction paramount importance should always be attached to the teaching of the craft; only in this way could the requisite proficiency be attained. Whilst it was highly desirable, in the interests of both the subjects concerned, to use all possible opportunities for legitimate correlation in the teaching of Housecraft and of Science, the present tendency to do so to an undue extent made it necessary to draw attention to the decrease of educational efficiency that must inevitably result from failure to recognise the inherent limitations to such correlation. Thorough study of even very elementary Science, which, by the development of reasoning power, of method and of common sense, was of such great help in the acquisition of knowledge of any kind, would

of course greatly facilitate the learning of a Domestic craft ; but in the present state of development of these crafts, knowledge of definite scientific facts could not be made of much direct use. It followed therefore that proficiency in, say, Cookery could be attained without knowledge of Science, and, conversely, that knowledge of Science would not prove a royal road to Cookery.

As to the general nature of a course of Housecraft, witness was of opinion that in any of the various types of Secondary Schools the best results could be achieved by assigning to Needlework adequate time in all Forms, and concentrating the teaching of the other crafts towards the end of the ordinary schools course or even after it.

(b) As "*Domestic Science.*"

The witness was of opinion that the use of the term "Domestic Science" was altogether misleading, and the attempt to teach what is designated by it educationally dangerous. Starting from the fundamental fallacy that an applied science of the household already existed, what was offered under the name of science was merely a series of rather disjointed object lessons.

The Science training which was so important a part of all education could only be given through the teaching of Pure Science, and not through the attempt to give a knowledge of the science underlying specific household processes. In such an attempt fundamental educational principles were certain to be violated : the difficult put before the more easy ; and the choice and sequence of subject matter faulty, in that very difficult Chemistry was dealt with instead of simple and educationally valuable Physics. Moreover, the present state of knowledge of the science bearing on these matters of daily life was so complicated and so fragmentary as to be beyond the grasp not only of the pupils but of the average teacher. Consequently, when the Cookery mistress was told that she must make her teaching more scientific, the almost certain result was diminution of efficiency, valuable time being taken from the craft, while the so-called scientific information imparted was at best purely dogmatic, at worst of a make-believe nature. To take the case of food values, only the highly trained physiological chemist could actually determine these values. Girls of school age could not even understand the processes involved, nor could they interpret and use intelligently what after all could not be considered as fully understood facts. Hence it was not altogether to be wondered at that a class of pupils who were asked to select the most valuable foods from a list giving the percentage composition of a number of nitrogenous substances, chose strychnia for breakfast and some other equally deadly poison for lunch in the belief that what contained most nitrogen must necessarily be most nutritious.

It seemed, therefore, to the witness that the efficiency of Domestic instruction in Secondary Schools was likely to be

hindered and the teaching of Pure Science injured by the attempt to deal with these two subjects as one, and to give the name of science to something which was not science at all. As to the plea that Domestic Science could and should be placed on a firm foundation of Pure Science, that was an impossibility until the teaching of Pure Science had been reformed and well organized; moreover, even the three years' preparatory course so often mentioned, however good it might be, would be inadequate, and would involve the dropping of Physics and Chemistry in favour of Domestic Science at just the age when ability to assimilate Pure Science showed rapid growth.

As regards syllabuses of "Domestic Science," the witness said that this was a case where among bad things the best were really the worst. When, as was the case with all those she had seen, there were glaring defects of a kind easily detected even by a person with no special knowledge of Science or of Housecraft, condemnation was certain to follow sooner or later; but it was possible to frame syllabuses in which a person without a knowledge of both Science and Housecraft would find nothing to be shocked at, and which, nevertheless, would be tainted by the inherent fault of dealing with matter too difficult to treat of scientifically, and doing so in a manner which would not really impart any knowledge of practical household matters.

#### SCIENCE.

The witness desired that Science should form an important part of the curriculum of every Secondary School. But she would prefer to see it dropped altogether rather than that it should be taken in the form of this hybrid "Domestic Science." She was of opinion that the main subject of Science should be Physics, supplemented by some very elementary Chemistry, and that it would be better to omit Chemistry altogether if it could not be based on Physics.

The supporters of "Domestic Science" made much of the bankruptcy of the Science teaching in Girls' Secondary Schools; but this argument, whatever force it might have as regards the results obtained at present, did not touch the fundamental question of what could be accomplished educationally by Pure Science when it was given a fair chance. It was undoubtedly true that hitherto the teaching of Science had often been very ineffective, a result for which the teachers could not be held altogether responsible. It was largely due to the fact that the schools had drifted in the direction of Chemistry rather than Physics; it had not been recognised that, of the two, Chemistry as a school subject was much the more difficult to teach, and that within the scope of what could be legitimately attempted, it offered much less opportunity for application to the phenomena of daily life. Moreover, in the majority of girls' schools both Physics and Chemistry were considered of less importance than

Botany, a state of things well brought out in the Report of the Board of Education for 1909-1910:—

“In practically all boys’ schools the subjects taken are chemistry and physics, while in the majority of girls’ schools botany is the main science subject. . . . In too many schools botany is regarded somewhat in the light of an accomplishment, making no very serious demands on the pupils’ intelligence.”

#### TEACHERS OF SCIENCE AND HOUSECRAFT.

The witness was of opinion that Science and Housecraft were subjects so fundamentally different as to make the employment of separate specialist teachers a necessity, but at the same time she agreed with those who wished that the teachers of Science should be more practical and the teachers of Housecraft more scientific.

The three years’ academic course taken by intending teachers of Science could not be shortened, and nothing could be got into that time besides Pure Science. The majority of the women who came to college to study Science were inadequately prepared in that subject. In many cases part of the first year had to be spent in work of a preliminary and remedial nature: acquisition of such knowledge of elementary Physics as is essential to the academic study of all other Sciences; fundamental change in the students’ general attitude towards such Sciences as they had learnt, necessitated by the schools’ neglect of Physics as the chief means of training in scientific method.

The witness had no objection to Housecraft being taught by people trained in the way hitherto conventional. The subject could be taught effectively and intelligently by a capable well-educated woman who had had no special training in Science, provided she was not expected to undertake the anyhow hopeless task of always giving scientific explanations of the processes involved. The one essential qualification for teaching Needlework, Cookery, &c., was that the teacher should herself be highly skilled in these crafts.

If, however, the regrettable necessity arose of producing teachers capable of combining the teaching of Science and of Housecraft, the problem presented became one of great difficulty. The witness considered that in such a case the training in these two distinct departments should be given successively and not concurrently. The usual three years’ academic course in Pure Science should be followed by one year’s learning of the craft at a Technical College, and by another year given to study of the theory and practice of education at a teachers’ Training College. This ideal course would take five years, or if, as unfortunately was likely to be the case for some time to come at any rate, the professional training was omitted, four years would be required. In either case intending teachers could not be expected to give so long a time without special

help or the certain prospect of compensation by comparatively higher salaries. Witness admitted that one year's Domestic work was a comparatively short allowance, and it was certain that proficiency in the craft could not be acquired if during the one year's post-graduate course Housecraft was only one subject of several. But what she contemplated was giving one year exclusively to learning the craft, an undertaking in which the thorough scientific training acquired during the preceding three years should prove most helpful. Moreover, it need not be considered essential to learn all the crafts in that one year, and it might be found better to select the craft most important in school work—probably Cookery—and to specialise in this.

The other possible method, that of the concurrent study of Science and of Housecraft, was followed in a number of courses recently organised for the purpose of producing Secondary School teachers competent to take charge of both these departments. The duration of these "combination courses" was three years, and witness considered that therefore they could not possibly provide sufficient time for the proper study of Science, and that it would be fatal to hand over the teaching of Science in any Secondary Schools whatever to women so inadequately prepared for so difficult a task. Whilst all three-year "combination courses" were bound to fail in the matter of producing competent teachers of Science, it depended on their special organisation whether in the acquisition of the crafts an adequate standard was reached or not. Thus it seemed to the witness that in the King's College three-year course, where the time allotted to the crafts was anyhow comparatively small, the work in the kitchen laboratory, which was begun before the students had either a thorough knowledge of Science or practical experience of the controlling conditions in actual cookery, would not be conducive to the production of good cooks.

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MISS MARGARET A. GILLILAND, Head Mistress of the Haberdashers' Aske's Girls' School, Acton.

*(Evidence given December 20th, 1911.)*

HABERDASHERS' ASKE'S SCHOOL, ACTON.

The witness said that the number of pupils in this school was 515. The average age of entry was about  $7\frac{1}{2}$ ; but some came as young as 5. About 56 of the girls at present in the school had come with scholarships from the Elementary Schools.

The ordinary pupil left at about the age of 18, but a good many, who were going on to University work, or were in the Secretarial Department of the school, or were not intended for any wage-earning occupation, remained until 19 years of age.



## HANDWORK AND HOUSECRAFT FOR GIRLS.

The witness regarded Handwork as a subject of great educational value for all girls and considered that it should be carried right through the Secondary School course. Housecraft should form an integral part of the course of every Secondary School for girls. Although the type of instruction might vary in different schools, the necessity for the inclusion of this very important subject was the same in all Secondary Schools for girls. It should be taken by every girl during her regular school course. It must not be used as a "siding" for the more backward girls or for those who would not have to earn their own living, and it must not be regarded as an easy alternative to Science for girls of 15. Otherwise there was a tendency for the subject, and consequently home duties themselves, to be looked upon with contempt. Moreover, the clever girl needed this training as much as, and even more than, the other, because she would necessarily lose much opportunity of home training owing to the demands of her College work and later of her profession.

In the witness' school a systematic course of Handwork was provided up till 12 or 13 years of age, including Modelling in clay and plasticine, Bast and Cane-weaving, and Cardboard-modelling, and this was followed by Housecraft. The latter included Needlework, Cookery, Housewifery, Dressmaking and Household Economics (*i.e.*, hygiene of house, site, plan, drainage, water, ventilation &c., personal hygiene, accounts, &c.). Laundry had been dropped, as it was found that the principles of softness and hardness of water could be taught quite as well in Housewifery, and actual Laundry-work was not needed by the average High School Girl.

The course of Housecraft was compulsory on all girls in the school. It commenced in the lower Forms with Needlework, which received  $1\frac{1}{2}$  hours per week, up to about the age of 14, when it was dropped, but was taken up again in the Form VA by those who did Dressmaking. Cookery began at 14 or 15 and occupied two hours a week for  $1\frac{2}{3}$  years, after which  $1\frac{1}{2}$  hours a week were devoted to the other branches of Housecraft. In the Sixth Form Household Economics were taken.

No exceptions were allowed in this course even in the case of girls who were studying for Scholarships, for Matriculation, or for other examinations. It did not help them in their examinations, and probably if they were allowed to drop this work and give to mere examination subjects the two hours which they now devoted to Housecraft, they might achieve higher results in the examination. The witness felt, however, that the work was so important that it was better to risk some slight loss in examination results than to neglect this branch of education.

A certain number of girls entering the school by means of scholarships had already received some instruction in Cookery, but for the most part any such work had been of a purely manipulative kind, and even of this the girls as a rule had had but little, having generally been exempted from it in order to be coached for the scholarship examination. Most of those who came from Elementary Schools, however, had been very thoroughly taught in Needlework.

#### *Needlework.*

Needlework was commenced at the age of 8 with very large stitches and a soft material. From the first the girls began to make things, commencing with dusters for their desks, and went on to needlework cases, &c., each new article bringing in a new stitch. Throughout the course the girls had to measure out the material, and draft patterns for their work. They also learnt to oil and clean a machine. The girls worked out their own designs done in the Art class.

A good deal of Needlework was also done at home in connection with a voluntary class of Applied Needlework, in which the girls designed patterns and worked them out.

#### *Cookery.*

Cookery should not start till 14 or 15. Before that age the practical work was likely to partake too much of the nature of play, and it was, moreover, hardly safe to let younger girls have anything to do with the kitchen range or gas stove.

The aim of the Cookery teaching should not be merely to impart manipulative skill. If that were the case a girl's mother could probably teach her better than the school could. Cookery was, of course, an art and involved a training in skill; but in teaching a girl the principles of typical dishes it was easy to arrange the practical work so as to give the necessary dexterity. Moreover, the work already done by the girls in connection with Clay-modelling, Weaving, &c., would have helped to make the fingers dexterous.

By this method the girls acquired a knowledge of Cookery which enabled them to carry out successfully the cooking of dishes other than those they had actually learnt at school, and they were given a cookery book from which to practise at home. They learnt a great deal from their mistakes. If a dish turned out wrongly they had to find out the reason of the failure.

The equipment of the Cookery room should approximate as far as possible to sensible home conditions: but home conditions as improved by thought and science, *e.g.*, the best type of stove, deep sinks and tables of the proper height. In this way sympathy between the home and the school was preserved and the mothers respected, and often followed, the methods of the school cookery room.

The girls did a good deal of work at home in connection with Cookery. Each girl kept a note-book containing one column for what was done at home and another for the results. The entries were initialled by a responsible relative. Specimens of the things done were occasionally brought to school. The girls had plenty of time for this work, as they did not have any of the ordinary book homework until they reached the Fifth or Sixth Form.

### *Household Economics.*

Household Economics began in the Sixth Form; but the girls had before that had a good deal of cleaning to do in connection with the cookery room and the range, and the washing up of the utensils used, and they had had practice in calculating the relative cost of various meals, and for varying numbers. In the Sixth Form a wider type of work was adopted. It dealt with such things as the selection of a suitable district to live in, the best kind of house to choose, the right aspect for dining and bedrooms, the ventilation of rooms. Great help had been given in this work by the kindness of local builders who had permitted the class to inspect their houses.

### *Hygiene.*

The personal Hygiene lessons were supplemented by talks with the Medical Officer (a lady) who had been appointed by the Governors of the school, and who was available for both medical inspection and teaching. Instruction of this kind came with added authority from a doctor.

Ambulance work was included in the school course for the first time this year. Hitherto, although this work had not been done in the school, the girls had been encouraged to attend local classes in connection with it.

### THE CORRELATION OF COOKERY AND SCIENCE.

By the time the girls started Cookery they had already had two years of Pure Science teaching. Subsequently the teaching of Cookery and Science were closely correlated. For the effective teaching of Cookery a groundwork of Science was very important; and the relation of these two branches of work was also found to increase the pupils' interest in Science.

It was not possible to arrange that each lesson in Science dealt with exactly the same problems as arose in the Cookery lesson of the same week. But all the way through there were constant points of contact. For example, the analysis of the yolk of egg, the properties of albumen, flour, starch, sugar, &c., all came naturally into both the Science and the Cookery course. It was not possible to teach exact formulæ, but much useful

information about the underlying scientific principles of Cookery could be given. It was very helpful to have a chemistry bench set up in the cookery room, quite apart from the food tables, so that the teaching could be illustrated on the spot by experiments wherever desirable. But it was neither safe nor suitable to teach Cookery in the science laboratory.

Although correlated, Science and Cookery should always be treated as two distinct subjects, and no attempt should be made to combine them in a single course. Again, while it was essential that the teacher of Cookery should have a good knowledge of Science, it was not advisable that the same person should teach both subjects, because in that case one or the other was certain to be subordinated. The training courses already in existence would no doubt in time provide an adequate supply of the right kind of teachers, though it was difficult at present to get the better girls to take up the teaching of Domestic Subjects. The witness did not think that the plan of adding a year's training in Cookery to the end of a full Science course could ever be successful.

#### POST-SCHOOL COURSES IN HOUSECRAFT.

The witness did not think it desirable to relegate Housecraft to a post-school course. In many cases the girls could not find time for this work at the end of their school life, and probably they would not as a rule care to begin it at that stage. But where a school took Housecraft as an integral part of the regular school course, then girls who had left the school could with advantage return for an additional year's work in it.

#### THE VALUE OF HANDWORK FOR BACKWARD PUPILS.

Handwork was very valuable in the case of the more backward girls. They could see their results so easily, and if anything was wrong the fault was more obvious than it would be in (say) Mathematics or Literature. The witness was not prepared to say that the slower girl was necessarily more benefited than other girls by this class of work, and would certainly not admit that the more intellectual girl was the more likely to be stupid with her fingers. She thought, however, that in many cases the slow girls could be helped more through their fingers than by the ordinary school work, and that the encouragement they derived from working at a subject in which they could make good progress was of great benefit to the whole of their education. The School Authorities were watching this question very carefully but so far had not had time to collect the materials necessary to form any general conclusions on the subject.

No general provision was made in the witness' school for grouping backward children together. The aim was, on the

contrary, to avoid this. In individual cases special arrangements were made to allow girls to take special time-tables; e.g., girls were allowed to drop Mathematics and Science and a second foreign language and take additional History, Literature and French, and extra Cookery and Needlework, and perhaps more Drawing. This kind of work was also planned for girls giving special attention to Music or Art work.

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MISS E. S. LEES, Senior Science Mistress at the Clapham High School.

(Evidence given November 15th, 1911.)

#### HOUSECRAFT.

The witness was of opinion that Housecraft, treated as an Art or arts, should be taught at a time when the art could be practised at home. Unless this were done the girls forgot what they learnt before they had an opportunity of making use of their knowledge. It followed from this that the proper time for most of the Housecraft work varied in different types of school; but this did not apply to Needlework.

##### (a) *Needlework.*

The teaching of Needlework should be commenced early, and should as a rule be discontinued when sufficient proficiency in ordinary plain sewing had been gained. The best plan would be to have a test at a certain standard, and let girls who passed that test discontinue their Needlework. The age at which girls would reach the required standard would vary of course with their aptitude, and also with the degree to which they had to do Needlework at home. Most girls, however, would reach the standard by about the age of 14 or earlier.

The case would be different, of course, in a school which gave special attention to Dressmaking; but even here it might be advisable to drop the Needlework for a few years after the minimum standard had been reached.

##### (b) *Cookery, Laundry-work, &c.*

In considering the most suitable time for the teaching of Cookery, Laundry-work, &c., regard must be paid to two different kinds of Secondary School, viz.: (i) the school in which the pupils were, as a rule, able to continue their education up to about 18 years of age; and (ii) the school in which an earlier leaving age was customary.

In the former class of school, which might be called the High School type, these branches of Housecraft were best deferred until after the close of the school course; but in individual cases where it would be unlikely that the girls

would have the opportunity of obtaining such instruction after leaving school it would be better that they should have it during the last year or two of the school course rather than omit it altogether.

The advantage in these schools of leaving this instruction until after the regular school course was that the girls would then be able to practise at home the things they learnt in their Housecraft course, whereas if the instruction were given while they were doing the full Secondary School work they would not have this opportunity of practice, and without it would soon forget what they learnt.

Experience showed that where such a plan was adopted it was possible to make special provision for those girls in the school who would not be able to attend a post-school course. At the Clapham High School, for instance, the Housecraft was normally taken in a post-school course; but any girl in the school after having had three years' Science was allowed, if she so wished, instead of continuing her Science, to take up the Housecraft work. In that case, she would not of course be able to reach so advanced a stage in this subject as the regular students of the post-school course, because her attendance was limited to two hours a week; but she would be better equipped than if she had had no work of this kind at all.

The witness did not think it desirable that in a school of the High School type Housecraft should be made a compulsory subject, though it should certainly be made possible for all girls to take it if they so desired. If this were done there were few girls who would omit the subject altogether, for most of them liked it. The subject was certainly a very valuable one; but there was so much of importance in education that it was impossible to teach in the schools all the things that would be useful in after-life. The first need was to educate the girls well, and if this were done they might be trusted after leaving school to learn to perform efficiently the duties that fell to their lot.

In the case of schools where the girls left at 17 or earlier, and at once had to set about earning their living, a post-school course was out of the question, and the instruction must therefore be given in the regular school course. It should be borne in mind, however, that the girls in these schools mostly had to do a good deal of housework after school hours, and that consequently there was not the same reason for postponing this instruction as there was in the case of the High Schools.

#### DOMESTIC SCIENCE.

The witness said that Domestic Science, in its strict sense, *i.e.*, as corresponding to Agricultural Science or Engineering Science, was not at all suitable for a Secondary School, because it presupposed a knowledge of Science beyond what could have been attained at that stage of education.

As to the new type of work called "Domestic Science," by which it was endeavoured to teach Science through the various processes of everyday life, it was difficult to see of what value it could be to substitute such instruction for really useful Housecraft together with Pure Science. Judging from the various syllabuses in existence, this "Domestic Science" seemed to be of little use from the point of view either of the craft or of science. As a craft there was too little of the art about its treatment for the pupils to acquire much skill in Cookery or other Domestic work, while, on the other hand, the Science was sacrificed to the necessity of bringing in an enormous number of facts in a limited amount of time far beyond the capacity of girls to absorb. Thus, without in any way adding to the teaching of the craft, the value of the Science training was lost altogether.

As to the correlation of Science and Housecraft, it was no doubt possible in this way to add to the value of the craft teaching. At the same time, it was important to remember that Housecraft might be taught very well as an art, and nothing more, and that skill could be attained without an understanding of the scientific principles on which the craft was based. If it was desired, however, to make the work more intellectual, the scientific explanations should be given as the need for them arose, or lessons bearing on the Cookery might be given by the Science teacher as desired by the Cookery mistress.

#### SCIENCE.

The witness was strongly of opinion that Pure Science was a subject that all girls should take, on account of the peculiar intellectual training it afforded. True Science had for its chief characteristics order, sequence, and continuity. The chief aim of the teacher was to use Science as a means of inculcating good habits of thought, clear and precise ideas, and right reasoning. Incidentally many useful facts were acquired, and interest was aroused in matters of everyday life, both inside and outside the home. The facts chosen for illustration should be as homely and familiar as possible; but they must fit in with the line of thought pursued.

For the purpose of giving this scientific training, the most suitable subject with which to begin was elementary Physics; the experiments were simpler and more varied, and the work could be made more instructive, than in Chemistry, and no part of it was too involved for the ordinary girl to follow. Botany again did not give so good a training as Physics, and the experiments were more complicated and took much longer.

At the Clapham High School the first three years of the Science course included two years of Physics and one year of Chemistry. This part of the Science course was common to all the pupils, and two hours a week were given to it. During the

fourth year the time allowed was also two hours a week, and the girls could take either Chemistry or Botany, or could forsake the science for the Housecraft.

In the VIth Form (Science Division) the time allowed was much greater, and girls might take all three branches, Botany, Chemistry, and Physics.

#### TEACHERS OF SCIENCE AND HOUSECRAFT.

The witness considered that, generally speaking, it was better to have separate teachers for Science and Cookery; but that, as far as possible, each should place her special knowledge at the service of the other.

As regards the training of teachers for Domestic instruction, no doubt a Science training was of great advantage to such a teacher in enabling her to make her teaching more scientific. But this advantage should not be exaggerated, for if a school provided a good Science course, the girls would not have so much need for scientific explanations in their Domestic work. It was, however, very desirable that the teacher of Housecraft should be a well educated woman who could take her place on an equality with the rest of the staff. Otherwise, the girls would be inclined to look down on Housecraft as an inferior subject.

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Miss G. McCROBEN, Headmistress of the Girls' High School, Wakefield.

*(Evidence given July 7th, 1910.)*

#### THE WAKEFIELD GIRLS' HIGH SCHOOL.

The witness stated that there were about 300 girls in her school, including the kindergarten. Some were boarders and some came in daily by train. Twenty-five per cent. of places were reserved, in accordance with the Board of Education's Regulations, for free pupils from the Elementary Schools, and a number of scholarships were given.

#### DOMESTIC ECONOMY AND GENERAL SCIENCE.

The witness said that the teaching of Domestic Economy and Housecraft in her school was all done through the Science. The girls began at about the age of 12 with a general Science course, in which the experiments were all related as far as possible to life. For example, in the elementary measuring course, they found the volume of vessels used in the kitchen; in connection with density they weighed equal volumes of milk and cream, and so got an idea as to how to ascertain the purity of milk; heat was illustrated by means of a series of tubes showing the circulation



of water in a house; and questions of ventilation and clothing were introduced. So throughout the course all the experiments were made to bear as far as possible on every-day life, and especially on domestic life. In the third year the teaching was illustrated from Cookery; thus the girls learnt the effect of heat on different substances, *e.g.*, meat cooked in different ways, starch, yeast, the baking of bread being performed as an experiment. An attempt had been made to illustrate the first and second years' work from Cookery, but this had been found to involve teaching a great deal of Cookery to illustrate a small scientific point, while the girls had been apt to regard the work as a game.

In the fourth year the pupils were divided into two sets, one continuing on the same lines as before, and the other taking a more regular Science course. Some girls therefore had the Domestic Science for only three years. This division was necessary in the interests of those who were going in for examinations in Science, as, for example, in the Matriculation Examinations. In separating the girls regard was paid to the needs of each individual.

In the fifth year Cookery was taught by a Cookery, and not by a Science, mistress. It was taken for granted that by that time the girls had learnt sufficient Science to prepare them for a course of more practical Cookery. The girls specialised in Housecraft during this year, and often did nothing besides Cookery and English or French. Most of them left at the end of the year.

The object of the Domestic Science course was two-fold, *viz.*, to teach the scientific principles underlying the various processes, and to give skill in Cookery.

An experiment was made some time ago in setting the Cookery class to cook the school dinners; but this did not answer, as it was found that the teaching was sacrificed to the preparation of the dinner.

The kitchen laboratory was really like a large kitchen, with tables for the girls to work at. It was rather different from some kitchen laboratories, which were sometimes equipped on such an elaborate scale that girls were not fitted for work in the ordinary house kitchen.

The amount of time given to general Science during the first three years was  $1\frac{1}{2}$  hours per week in consecutive lessons, and in the fourth year 2 hours consecutively were given to Domestic Science in the case of those girls who took that course.

Botany and Nature Study were taught before the age of 12, at which the general Science course began; after that age the girls had three quarters of an hour a week of Botany as well as their  $1\frac{1}{2}$  hours of general Science during the two following years; Botany was then dropped until the Fifth Form, when those specialising in Science took it up again in a different way.

Hygiene and Physiology came into the general Science course to a certain extent.

#### NEEDLEWORK.

All the girls learnt Needlework up to the Fourth Form, after which it was optional. They were very keen on it, and were allowed as far as possible to make things which were useful. They did not do much in the way of samples of stitches.

They began Needlework\* as soon as they entered the School, at 8 or 9 years of age, commencing with the coarser kinds of work. From the first they began to make articles, such as iron holders, little mats, &c.

The little ones had two half-hour lessons a week; the older ones had one lesson a week, which lasted three quarters of an hour in the lower Forms and one hour in the higher.

#### PRACTICAL GEOGRAPHY.

A certain amount of Handwork was carried on in connection with Geography. A piece of ground had been made into a geography garden, with a range of mountains (the greatest height  $4\frac{1}{2}$  feet) and a river basin, with a river and two tributaries. After learning the physical part of the work the girls had to lay a railway line, putting it together and levelling the ground by means of embankments. They also constructed bridges across the river, and built models of towns, making the houses of clay, tin, or cardboard. Each Form chose a town and each child made something towards her town. The houses were made by the girls at home; but the railway was constructed at the school. Difficulty was found in getting the sizes of the houses in correct proportion with the mountains, and also in fitting the towns into their right geographical position. The ground was altered each year and the work commenced afresh. The garden had a rock basis, which was made by a builder in accordance with a plasticine model.

Two lessons a week, of three quarters of an hour each, were given in Geography, and part of this time was given to work in the garden in the summer term.

#### DRAWING.

Drawing received  $1\frac{1}{2}$  hours a week, but was optional in the Fifth Form. It was taught on the lines suggested by the Royal Drawing Society, and included a good deal of freehand, model, and memory work.

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\* We have now adopted the Swanson Macbeth methods for the little ones. (November 1912.)

## THE VALUE OF PRACTICAL WORK.

The witness said that the most useful result of the practical work done in the school was the good it did in helping to cultivate the general intelligence of the girls. In their ordinary life they appeared much more intelligent and better informed. This was noticeable in the way they played games and did other things out of school. The practical work did not interfere with the ordinary work at all; on the contrary, the girls worked all the better for it.

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Miss M. E. MARSDEN, Head of the Department of Domestic Economy at the Battersea Polytechnic.

*(Evidence given October 22nd, 1909.)*

The Department consisted of a Day Training Section for teachers of Domestic Subjects, a Day School for girls of 14 to 16 years of age, and afternoon and evening courses and classes for students attending either for courses, or for detached classes.

The number in this Department was about 130. The ages of the students varied from 18 to 35. The fees were 70*l.* for the three years' course and 52*l.* for the two years' course of training. The greater number of students had been educated at Secondary Schools of the High School type. At the completion of their course, the students generally obtained appointments in Technical Institutes and Secondary Schools. Some took appointments in Elementary Schools, while others who took appointments in the country, usually taught in both Elementary and Secondary Schools, and sometimes, in addition, taught classes of technical students. It was a decided advantage for students before taking up this course of training to have studied Physics and Chemistry. The Battersea Polytechnic had endeavoured to bring into greater prominence the relationship of the teaching of Chemistry to the teaching of Domestic Subjects. In order to realise this aim, all students, in addition to the usual course of Chemistry and Hygiene, took additional scientific courses of experimental work having special reference to household processes. These courses were directed by a mistress who had herself taken the full course of training and also assisted the Head of the Chemistry Department of the Polytechnic.

The larger number of students took a three-year course of training, a few took a four-year course, and some took a two-year course. Two courses of training, each of three years, were offered by the Polytechnic. Each of these courses included training in Cookery, Laundry-work, Housewifery, Chemistry, Hygiene, Physiology and Elementary Psychology. One course.

in addition, included a year's training in more advanced Science as applied to Housecraft—Physics, Chemistry, Bacteriology, Hygiene and Physiology. The other course included the subjects of Needlework and Dressmaking. There was a steadily increasing demand for teachers of Domestic Economy, and no student who had successfully passed through her course of training had failed to obtain an appointment on its conclusion.

#### GIRLS' DAY SCHOOL.

This school was mainly attended by pupils from the Elementary Schools who had obtained London County Council Scholarships. A few fee-paying girls also attended, the fee being 2*l.* per term. The course lasted for one year. The object of the course was to train the girls as home-makers. A small proportion, at the conclusion of the course, entered domestic service. Many entered the Dressmaking and Millinery trades, and some remained at home to assist their mothers to do the work of the house. The number of hours of instruction per week was 27½, which was divided as follows:—

7	hours	to	Cookery.
4	"	"	Laundry-work.
4	"	"	Housewifery and Hygiene.
8½	"	"	Needlework, Dressmaking, and Mending.
2½	"	"	Arithmetic, English Literature, and General Knowledge.
1	hour	"	Drill.
½	"	"	Singing.

Science, as such, is not attempted in the course. Each subject was taken every week. The educational value of all these Domestic Subjects was very high. Great improvement was noticed in the girls' general intelligence. Each girl during the course did a large amount of practical work, and was trained to think. Her skill in manipulation was much improved. The numbers in the classes being small, the teacher's influence over each individual girl was great. It would be a desirable thing to increase such schools. If the school-leaving age were raised from 14 to 15, in Elementary Schools, it would be of great value to the girls to spend a large part of their last school year in the study of Domestic Subjects.

#### AFTERNOON AND EVENING CLASSES.

The afternoon classes were attended by students who desired to improve their knowledge of Housecraft for use in their own homes.

The evening classes were attended by—

- (a) Students who wished to gain proficiency in Domestic Arts in order to assist them in their home duties.

- (b) Apprentices and workers in trades, also domestic servants.
- (c) Students who wished to obtain certificates in Needlework, Dressmaking or Millinery, in order to enable them to teach these subjects in evening classes.

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#### ADDENDUM, November 1912.

The number of students training as teachers has increased from 130 to about 150. The course of training, which includes a third year of more advanced Science as applied to Housecraft, has proved eminently satisfactory. Every student who has taken it has obtained an appointment either in a High School or other Secondary School, or in a Technical Institute. She is not only teaching the Domestic Arts, but is also taking classes in which the Science is closely correlated with Domestic Arts. There is an increasing demand for students who have taken a three-year course of training to teach Hygiene throughout Secondary Schools. As the Hygiene course given at the Polytechnic, even to students who only take a two-year course, is very thorough and comprehensive, such students are well qualified to take appointments of this kind. There is also a steadily-increasing demand in Secondary Schools for students who are qualified to teach Needlework and Dressmaking in addition to Cookery and allied subjects.

Reference was omitted, in 1909, to the course of training for students who are trained for home life, or as housekeepers or matrons. This course covers a period of one year, and includes Cookery, Laundry-work, Housewifery, practical housekeeping and household sewing. This course is very valuable to students who intend to remain at home and assist in the management of the house, or to those who wish to live in the Colonies or to take appointments as housekeepers.

Hostels of residence for students, under the supervision of the Governing Body of the Polytechnic, have been provided. This provision of recognised places of residence has been greatly appreciated by students.

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Miss HILDA D. OAKELEY, Warden of King's College  
for Women.

*(Evidence given March 21st, 1912.)*

#### COURSES IN HOME SCIENCE AND ECONOMICS AT KING'S COLLEGE FOR WOMEN.

##### AIMS AND OBJECTS OF THE COURSES.

The original idea of the pioneers of this scheme seems to have been that there was a kind of knowledge related to the work of women, in the organisation and administration of the household, both in ordinary home life and in institutional life, in a way similar to that in which the knowledge required by the medical student is related to the doctor's work, or that of the agricultural student to the agriculturist's occupation. From this starting point it seemed to follow that it was not enough that many admirable efforts had already been made to provide a training in Domestic Science in special schools, but that a

place ought also to be given to these studies amongst those of Higher Education in order to ensure, amongst other results, the following :—

1. The subject would be taken up more generally by persons of ability.

2. The subject would be studied side by side with Arts and Sciences : thus an atmosphere of humane and liberal influences would be brought to bear upon it.

3. A stronger stimulus would be given to more advanced work in connection with those branches of science which are related to the applications of science in household work, not necessarily by students when taking the course, but by teachers and research students and so a new applied science be gradually formed.

4. In existing schools the interest would be increased and the standard would be raised by the introduction of this new College Course. The main principles of Chemistry could be taught in girls' schools with more reference to its application to Household Economy : thus, the subject would become more attractive and the work of the household would become more intelligent and interesting.

Briefly the aim of the course was the using of the educational forces at our disposal to combat that depreciation of the activities related to household work due to both social and industrial causes. The employment of an educational remedy implied, of course, the belief that the mental discipline belonging to the subjects concerned could form a real education, and one by which many may be trained, who would not otherwise go on to Higher Education.

#### *The Subordinate or Special Objects aimed at.*

The subordinate or special objects aimed at are—

- (1) The training of a body of persons able to bring scientific knowledge and the interest of trained minds to bear upon household matters, and stimulated to reflect upon the larger problem referred to above with which the modern world seemed to be confronted. At its highest point this ideal might be expressed as that of making a valuable contribution to the thinking power at present devoted to these questions.
- (2) To reach the schools in which many of the women trained in this way may be expected to teach, and so affect a much larger number of persons than those who went to College, or were likely to take this Course (Home Science).
- (3) To influence other departments of life upon which the students may enter, *e.g.*, those in which they

could apply their knowledge towards the improvement of social conditions, in the sphere of public health, in the houses of the poor, or the ignorant, and in the care of children, &c.

In answer to questions the witness stated that the students themselves would benefit educationally by the training.

#### THE COURSE. (See Addendum on p. 335.)

In answer to questions the witness stated there were at present 27 students taking the Home Science Course, including the post-graduate students. Altogether in the College there were about 90 to 100 regular students, and in addition a good many occasional students. Of the post-graduate students some had already taken degrees and some had taken a course of training in a Domestic Training College. The latter took, in most subjects, the same course as the post-graduate students; there was, however, a differentiation made in Chemistry.

A diploma was given—a College, not a University diploma—to the post-graduate students. Only two had so far completed the three years' course. These received a certificate.

The hostel was not yet built. The students at present did the practical work in a house separate from the College. They were examined in practical work—Cookery and Laundrywork—before receiving the diploma.

There was a special department of Economics of the Household. The lecturer was practically in charge of the work, although she consulted Professor Urwick of King's College. Witness attached great importance to the study of Economics in this course.

Although they were cramped for space they had not yet been forced to refuse students.

The two types of students (*i.e.*, those taking the Home Science Course and the ordinary students) worked well together.

The course was now in its fourth year.

#### SUBJECTS TAKEN.

The course was new chiefly in the following aspects :—

- (1) The way in which the subjects were grouped together, and associated with practical Domestic work.
- (2) The special emphasis given to certain parts of the subjects in which work to some extent new is already being done, or would be done when the whole course had had a longer history.

Thus the application of Chemistry to Cookery, Laundrywork, &c., was shown through the Kitchen Laboratory work. It was thought that although the majority of students would not enter

upon anything that could be strictly called "research," their familiarity with the experimental methods would help to give them a scientific attitude in dealing with the problems of everyday household life.

The following are examples of the experimental work through which that might be effected : —

- \*The amount of tannin extracted from tea in a given time.
- \*The effect of hard water and of soda upon tea.
- The necessity or otherwise of soda in cooking greens.
- The use of aluminium or enamelled cooking vessels.
- The preparation of meat juices.
- The use and mixing of dried milk.
- The detection of margarine sold as butter.
- The preparation of floor polishes.
- The hygroscopic nature of textile fabrics.
- The conduction of heat by textile fabrics.
- The inflammability of textile fabrics.

So far the only "research" work (in a strict sense) carried on by students had been the changes undergone by fat under heat (*i.e.*, pastry). There was every reason to hope that, given more space and better apparatus, more "research" work would be done.

The study of Economics was regarded of great importance, enabling the student to take a liberal view of the course and see the relations both of work in the household to other kinds of work and of the present conditions of the household to historical conditions. A new field of work was being taken up in the Economics of the Household upon which the three-year student did not enter until she had had a grounding in the elements of Economics and of Industrial History. There seemed to be room for interesting investigation in such subjects as the following :—

- (1) Change in the character of the food supply in the 19th century, caused by the introduction of cheap meat and cereals, and the increased price of dairy produce.
- (2) The effects of these changes on the nutrition of children.
- (3) Sociological effects of the growth of suburbs brought about by the growth of cheap locomotion.
- (4) Industrial aspects of fatigue.

With reference to the other subjects, and the appearance of overweighting the course which their number might suggest, the witness explained that certain of them were taken in subordination or relation to others, *e.g.*, Physics in subordination to Chemistry, Physiology in relation to Hygiene.

The witness pointed out that the number of hours devoted to Practical Domestic Arts was substantially less than that

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\* These two pieces of research have been undertaken by the Lecturer and not by the students.



usually required for the training of teachers in schools under the Government. The aim of the courses, however, admittedly included less perfection in technique in Cookery, &c. The students, moreover, were not expected to spend so much time in the work ancillary to Domestic Arts, *e.g.*, cleaning cupboards, &c.

In answer to questions the witness stated that to her knowledge there were no other College courses, at least in this country, where the particular subjects were associated as they were in this course.

Whilst the aim was not to bring the subordinate subjects up to the B.Sc. standard, it did not seem educationally unsound to make, as it were, new lines of division amongst the sciences, taking from some of them only those elements which were required for the purposes of a new division of knowledge. Something analogous appeared to be done in the course for the London Engineering Degree.

The witness thought the subject of Economic Biology was a somewhat new branch.

Bacteriology though felt to be important was treated as optional at present: so also were Psychology and Ethics. Only the more advanced students in the 3-year course would have time for those subjects.

Professor Smithells was Honorary Adviser to the Board of Studies, especially in the subject of Chemistry and the application of Science to the household.

Only those students who were graduates, or something equivalent, or were trained teachers of Domestic Science were allowed to take the one-year's course. An occasional student might take one or more subjects. The other students took a three-years' course.

There was a good deal of difference of opinion as to whether Science and Domestic Science could be taught together in schools. Some people thought it was impossible to do so much as was attempted in the College course in the time, but witness did not think the critics had usually had personal experience of the course. Witness would not like a course of less than three years.

Witness did not think it possible to make the Science valuable from the experimental point of view\* before the third year, although it was possible that in the second year's teaching there might be some sort of preparation for the experimental work.

In physics there was no three-year course. It was only taken in the first year. The Physics was really elementary Physics—not much Electricity and Magnetism. If the students had a good science groundwork they could get on much faster.

Intending students were asked to take the University Matriculation examination. Chemistry was not insisted upon

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\* *i.e.*, in the Kitchen Laboratory

as being one of the subjects, but it was recommended. Chemistry was a strong part of the course; it occupied more hours than Cookery.

Mathematics did not enter as such into the course.

One difference between the three-years' course and the ordinary instruction in a Domestic Science Training School was that more time was given to Science and less to Domestic Arts. The relation between the two was very much the same. Much the same time was given to Domestic Arts throughout the three-years' course, but in the third year, after this session, additional work would be done in the kitchen laboratory.

There was no course of Cookery going on in the College. The practical Domestic work was taken in a house outside.

The three-year students took General Economics in the first year, Industrial History in the second, Economics of the Household in the third.

#### AFTER-EMPLOYMENT OF STUDENTS.

The following list shows the chief occupations that past students have taken or may take up:—

- Teachers of Science and Domestic Arts in Secondary Schools.
- Housekeepers in Hostels and large Institutions.
- Heads of Home Centres.
- Hygiene Lecturers.
- Health Visitors.
- Social Workers.
- Assistant Professor in Home Science in a Colonial University College.

The witness pointed out that the ex-students referred to above were mainly one year (or post-graduate) students.

In answer to questions, the witness stated that those who had taken a four-years' course (*i.e.*, the Graduates and Domestic Science Teachers) expected and usually secured a higher salary than teachers whose preparation had occupied three years.

#### *Conclusion.*

In answer to questions, the witness stated that she was of opinion that Domestic Training should be taught, if possible, at all the Training Colleges for teachers.

If a school had two teachers of Science it was desirable that one should have had special Home Science training, such as was given at King's College for Women.

A new aspect of Chemistry might in time be developed, but this was a question on which she could not speak as an expert.

## ADDENDUM.

*Three-Years' Course—Distribution of Hours.*

For Session 1912-13.

Subject.	Hours per		1st Year.	2nd Year.	3rd Year.	Total.
	Week.	Term.				
<b>CHEMISTRY :</b>						
Lectures - -	2	20	60	60	60	180
Practical - -	4	40	120	150	180	450
<b>PHYSICS :</b>						
Lectures - -	2	20	60	—	—	60
Practical - -	2	20	60	—	—	60
<b>BIOLOGY (including Economic Biology):</b>						
Lectures - -	2	20	60	30	60	150
Practical - -	4	40	120	—	120	240
<b>PHYSIOLOGY AND HYGIENE :</b>						
Lectures - -	2	—	—	60	60	120
Practical - -	2	—	—	60	60	120
<b>ECONOMICS :</b>						
Term 1 and 2 -	2	20	50	60	70	180
Term 3 - -	1	10	—	—	—	—
<b>PRACTICAL WORK IN HOSTEL :</b>						
Year 1 and 3 -	5	50	150	240	150	540
Year 2 - -	8	88	—	—	—	—
			680	660	760	

*Note.*—With reference to the above evidence, Miss Oakeley writes, November 11th, 1912: "I do not know whether it ought to be explained to the Board that the scheme of the courses in Home Science and Economics given here is not yet regarded as having received its final form, as we are learning through experience that certain modifications and additions may be desirable. In particular, it is hoped that a fourth year may be taken by those students who can give a little extra time to improving their knowledge in one of the main subjects of the course. In fact, there is already one student taking a fourth year after obtaining her three-year certificate."

Miss E. A. OGDEN, Headmistress of the Akroyd Place  
Infants' School, Halifax.

*(Evidence given January 26th, 1912.)*

The witness explained that the scheme of Handwork she had adopted had been the result of experience gained in the Infants' Department of an Elementary School, where the children were retained till the age of seven. She expressed the belief that an extension of the same system of practical work might be adopted among the youngest children in Secondary Schools.

#### REASON AND AIMS OF THE SYSTEM.

The Handwork formed part of a larger scheme, and was not confined to "Occupations" or "Subjects," but drew its suggestion from the general course of work in the school.

There was innate in every child a love of production. This instinct could not be wisely developed apart from its general studies, since the knowledge therein gained and the interest and real enthusiasm aroused created a strong desire towards corresponding expression. The main object of the activity was not primarily to obtain skill, but to further discernment and to develop the character.

As many of the children belong to that part of the community which numbered the unemployed, the thriftless and the helpless in its ranks, special weight was given in the practical work to the following aims:—

1. The development of general capability—the exercise of the constructive powers not being limited to any chosen medium of expression or to any series or course of exercises.
2. The development of resourcefulness—one of the most characteristic features of the work.
3. The development of the perceptive powers.

The witness was of opinion that the same aims of inculcating economy, resourcefulness, initiative, with a different signification, would be equally valuable in a Secondary School.

In addition, the reciprocal action between the acquirement of knowledge and its application had a most beneficial effect on the development of the child's mental capabilities.

#### SYSTEM OF HANDWORK, &C. IN THE INFANTS' DEPARTMENT OF AKROYD PLACE SCHOOL, HALIFAX.

The work concerned itself with the expression of one subject for a considerable period of time: and represented the concrete phase of the child's many days' thinking. With these aims, use was made, the witness stated, of a "Concentration" Scheme of Work which usually centred round the life-story and writings

of some man who was worthy of being a child's friend or hero, as, for example, George MacDonald, R. L. Stevenson, Gordon, Livingstone, &c.

During the previous year George MacDonald had formed the subject of the practical work.

Having decided upon their hero, certain stories or scenes were chosen from his writings or life for illustration. George MacDonald, for instance, had resided in Scotland, Italy, and Algeria. The children then made models of scenes amidst which he had lived; for example, models had been constructed of—

1. A Railway.
2. An Italian Street Scene.
3. An Algerian Street Scene.
4. Castle and Grounds on Moray Firth, &c., &c.

The work was mainly co-operative, all members of the class contributing to produce objects which should form part of the large model. In the final selection—where a selection was necessary—the children did not know whose work was incorporated in the model, except with regard to single objects. The witness stated with conviction that the elimination of the personal element discouraged vanity and promoted a spirit of friendliness and mutual help.

The children made suggestions and gave a great deal of thought to the making of the articles.

The witness gave instances where the children had spent their pocket-money and had consulted together and helped one another to obtain a successful model.

The co-operative achievement was of impressive magnitude, and offered greater possibilities for graphic expression and illustration than could be secured by individual effort.

Frequent reference to the personality around whom the work centred was made throughout the course.

All kinds of material were used in the production of the model, such as leather, card-board, wire, wood, &c. Old material, generally looked upon as waste, was used with a view to developing resourcefulness.

The Local Education Authority provided very little of the material. A few tools had been supplied. Much of the work had, however, been accomplished with old tools such as meat saws, files, gimlets, bacon knife, &c.

In answer to questions, the witness stated that boys of between six and seven used the saws and gimlets, and an accident had hardly ever occurred. They worked rhythmically, one acting as foreman.

The course generally lasted a whole year; but it did not, of course, occupy the whole time of the school, though most of the subjects, excepting Reading, had some association with it.

When they proceeded to the higher standards they were reported as showing much animation and intelligence, and their discipline was unimpaired.

The class consisted of boys and girls; the girls did not, however, do the Wood-work.

#### BENEFITS OF THE SYSTEM.

The witness stated that the boys worked with great zest and delight. The moral effects were very marked; the children gained a mastery over themselves by the training of the will, the exercise of self-restraint, the cultivation of energy and the concentration of the mind. The mental faculties were stimulated. The powers of observation, reasoning, and attention were fully alive, and the children became keen and alert. Their powers of language grew perceptibly. Sympathy with other nations was deepened. The Handwork helped them to realise the subjects of oral instruction.

The character of the child was revealed in the Handwork lessons more than in any other lesson. The witness attached great importance to the formation of character by means of Handwork.

#### HANDWORK AND OTHER SUBJECTS.

The witness considered Handwork helped many other subjects. Practical experience in Arithmetic was given, and Geometry was made easier by ideas gained of the relations of boundaries and of spaces.

English was assisted by the introduction of new words into the vocabulary of the child, learnt in connection with the Handwork.

The freedom with which the children discussed the objects and aims of their work produced a more ready expression in speech and writing.

The witness suggested that the early stages of French could be taken in a practical way. That portion of Stevenson's life spent in France, for example, might be chosen for expression in Handwork. The scene might be constructed, and French names given to each object, and conversations could be conducted in French.

Geography and History lessons could also be taught more realistically by illustrating them in Handwork.

Witness considered practical work to be a valuable means of education and worthy of forming an integral part of an Elementary or Secondary School Course.

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## ADDENDUM.

## THE ALGERIAN MODEL.

*A Street in Algiers.*

George MacDonald spent a winter in Algeria. This was necessitated by a breakdown in health.

*Objects shown in the Model:—*

I. *The Street.*

Ascending in steps every 2 yards.

II. *The Buildings.*

(a) The Mosque.

(b) The Café.

(c) The Charcoal Dealer's Shop

(d) The Handkerchief Shop.

(e) The Turkey Carpet Shop.

(f) An Archway over the Street with house above.

(g) A Typical Algerian House.

(h) A Jew's House.

III. *The People.*

Seated and Standing.

*Characters.*

1. Bread woman under umbrella with loaves placed on a board.
2. Women going into Mosques, having first taken off shoes.
3. Customers at shop with purses.
4. Woman bringing out rubbish to scavengers.
5. Fishmonger with fish.
6. Scavenger and donkey with paniers.
7. Carpet dealer with carpets.
8. Charcoal dealer with charcoal in wire salad strainer.
9. Café proprietor.
10. Draught players.
11. Vegetable seller with wire basket in which were displayed onions and carrots.

*Description of separate Objects.*

I. *The Street*—cardboard boxes of varying depth, paved with red bricks. *Bricks*—brown paper, glue, whiting and powdered red chalk, moulded into shape.

II. *The Buildings.*

(a) *The Mosque*—an inverted cardboard box for body of sanctuary. Pillars—rolled cylinders of paper. Domes—old india-rubber balls split in halves. Pinnacles—corks, paper, and mantle box ends. Steps—paper. Fence—rolled cylinders of paper.

The whole white-washed.

(b) *The Café*—two boot-boxes placed one over the other, a piece of cardboard inserted between to form shelter from the sun. Doorway cut out. Windows—silver paper. Woodwork—rolled cylinders.

The whole white-washed.

Outside Café a bench made of rolled cylinders. On bench an Arab with draught board.

*Draught Boards*—squares of wood marked by grooves, sawn by boys and coloured.

(Large draught boards also made for children's use in paper and cardboard. The squares = 1 inch square painted. The whole mounted upon cardboard, made to fold and "Draught Board" printed on the outside.)

(c) *The Charcoal Dealer's Shop*.—Two cubical shaped cardboard boxes placed one over the other with cardboard shelter inserted

between. Door cut out. Woodwork = rolled cylinders of paper  
No windows, but shutters cut in box.

*Interior.*—Counter—piece of wood mounted on a broken bottle and tin cans. Strung from ceiling old clothes—bits of coloured cloths.

(d) *The Handkerchief Shop.*—See Café—shutters instead of windows. Handkerchiefs—squares of coloured cotton and prints cut to measure.

(e) *Turkey Carpet Shop.*—See Handkerchief Shop. Turkey carpets described later.

(f) *An Archway over the Street.*—The house above—cardboard box (boot). Pasted on each side a cardboard with archway cut out.

(g) *A Typical Algerian House.*—12 boot boxes, 6 placed to enclose courtyard and 6 to form second storey. All these plastered over with paper pulp, windows and doors being left unplastered. Windows—silver paper and match stalks for iron bars. Doors painted brown.

Courtyard paved with six-sided red tiles. These made on squared paper with black crayon and then painted red. In centre of courtyard *fountain* moulded out of paper pulp, stick for centre.

In courtyard Algerian cradle—folded paper.

Balcony—cardboard supported on rolled cylinders for columns. Tracery and railings—paper cutting.

Steps—folded paper.

(h) *A Jew's House*—with courtyard and outside staircase. Built up of clay bricks. The whole blue-washed—a contrast to the white-wash. This being distinguishing feature of Jew's House.

### III. *The People.*

*Women* - Body = cotton reel; legs = wood; head = chocolate packing paper tied in calico.

#### *Clothes.*

(a) Haik—woollen, woven by children.

(b) Pantaloons—old muslin.

(c) Bodice—lace curtains.

(d) Girdle—wool.

(e) Veil—calico.

(f) Ornaments—beads, &c.

*Men* - Figure as for woman.

#### *Clothes.*

(a) Gandoura—calico.

(b) Turban—coloured cloth.

### *Other Objects.*

Bread woman's umbrella—paper covered with umbrella cover cuttings.

Ribs—match stalks. Handle—rolled cylinder of paper.

Loaves—clay.

Shoes—leather.

Purses—woven raffia and plaited strings.

Fish—clay.

Paniers—woven raffia.

Carpets—coloured wools woven by children.

Wire salad strainer—wire woven by children.

Onions and carrots—clay.

Parrot cages—Thin sticks and cardboard.



Mrs. STEPHEN PRIESTMAN, formerly Teacher of Science at  
Leeds Girls' High School.

(*Evidence given October 21st, 1909.*)

In answer to questions witness said that after taking a London Science degree from the University of Leeds (then the Yorkshire College), she taught Pure Science at the Bedford High School. Subsequently she accepted a post at the Leeds High School, and took up the teaching of Science applied to home life on the lines suggested by Professor Smithells. Before commencing this new work she attended Cookery classes twice a week for three months while continuing some teaching work. She found no considerable difficulty in acquiring a sufficient knowledge of Cookery.

#### SCIENCE TEACHING AT THE LEEDS GIRLS' HIGH SCHOOL.

At the Leeds High School there were two Science teachers. One took Botany and Nature Study, while the other (the witness) took Physics and Chemistry. But the Physics and Chemistry were applied to household matters, that is to say, the teaching of the Science was illustrated by means of household topics rather than things the children had never heard of. The witness in her teaching of Science took whatever Cookery or other household work was done in the school. Though given the option of having a separate teacher of Cookery, she preferred to do the whole work herself, on the ground that the proper relation between the Science and the Housecraft could be better maintained if both subjects were taken by the same teacher. In all the smaller Secondary Schools at any rate it would probably be a good plan to have the Cookery taught by the Science mistress: it should be taught not as Cookery but as Science.

The amount of time given to Domestic Science (including a very little practical Cookery)—80 minutes each week—was not sufficient to do it properly. The school was of a pronounced classical type, and before the introduction of Domestic Science only two periods of 45 minutes each a week were given to Science. Now the upper and lower fifth forms received a lesson of 80 minutes duration each week, besides 40 minutes given to Botany. The lower forms devoted an average of an hour a week to each of these subjects.\* It was obviously not right that a subject with so wide a range as Domestic Science should be given only the same time as Botany. That it was so was no doubt partly due to the fact that many of the girls were preparing for examinations, for which very few took Science except those

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\* The sixth form specialise largely for examination purposes, and may or may not take Science, according to circumstances.

taking Botany for the Higher Certificate examination of the Oxford and Cambridge Conjoint Board. But while desiring a considerable extension of the time allowed for Domestic Science, the witness would not propose to eliminate Botany altogether. Nature Study was a very useful subject for the younger children, while the older girls liked Botany. So long as too much time was not spent upon it, it was desirable to include it in the curriculum.

Owing to the small amount of time available for Domestic Science, the instruction was squeezed into narrow limits. Instead of being confined, as at present, to questions of health, Cookery and Laundry-work, it ought to be made to cover the whole range of everyday life. Under existing conditions the time allowed had to be shared between the Chemistry and the Cookery or kitchen laboratory. The work one week in the former was made to lead up to the demonstrations in the latter in the following week at such times during the course when any Cookery was necessary.

The syllabus of Domestic Science followed at this school was published in the "School World" for April 1909; but that syllabus was not nearly so full as the witness would now like it to be. No text books whatever were used in the course. It was possible to ask a good many questions to see whether the students had followed the teaching, and a terminal examination was held—sometimes practical and sometimes not. The course commenced in the lower third form (the age of the pupils being about 10 or 11), and continued until the upper fifth form. This represented about six years of the school life of an average pupil.

No difficulty was found in teaching Science to the younger children, who were in fact very keen about it. Before starting Science proper they had taken Nature Study, which commenced in the kindergarten. Nature Study, however, did not involve a great deal of practical work, and there was not much to carry on the finger work of the kindergarten up to the time of starting Housecraft except Drawing and Needlework.

A few examples of the subjects dealt with were as follows:—

The course opened with elementary Physics, commencing with the metric system, at the same time as the girls were taking the metric system in their Arithmetic. Later came Heat, in connection with which a practical demonstration on hot-water appliances was given by means of a visit to a house in process of construction, in which the various parts were examined. Chemistry started with air, which brought in respiration, and so introduced Physiology, including First Aid. Then followed water, metals, and the effect of acids. Next came the study of flames, illustrated by gas-cooking stoves. A study of chalk, marble, limestone, and washing soda was followed by fats and oils, which in turn brought in frying—the first occasion for the use of the kitchen laboratory. Emulsions led to the

digestion of fats and washing of greasy vessels, in connection with which (fats) the class made and used soap. Then came sugar and starch, followed by eggs and meat and a consideration of the difference between proteids and carbohydrates from a dietetic point of view.

There was no doubt at all that the girls acquired both scientific method and knowledge by means of such a course. They took interest in the work, asking numerous questions, and learnt in such a way that they could not forget. Under the old methods they did forget, even when they performed experiments themselves, and the work did them very little good. At the same time a course on the new lines taught a great deal that would help a girl to start practical cooking, and that the girls did apply their knowledge to practical work was shown by the number of puzzling questions they brought from home. But it was not at any part of the course the aim to turn out tasteful dishes, and the chief idea was not to prevent the spoiling of the material used. For instance, meat would be taken and treated in three different ways, so that the results of different methods might be observed, the dietetic value of each method being carefully noted.

Some of the girls in the course (but not the majority) had the intention of becoming teachers. Others also were going to Universities, and others would stay at home. But the course had not been in existence long enough to make it possible to trace its effects on the after-life of the pupils.

#### LABORATORIES.

There were four laboratories in the Leeds High School, for Chemistry, Physics, Botany, and Cookery. Some of the Physics work, however, was more conveniently taught in the Chemistry laboratory. It was necessary to have separate laboratories for Chemistry and Cookery, in spite of the close relation between the teaching of these two subjects, because there would not be room in one laboratory for all the apparatus required. In the kitchen laboratory a gas boiling ring was provided for each student. The arrangement was not altogether convenient, the girls generally being unable to see into their pans without going round to the other side of their benches; but the principle of having a separate gas ring for each girl was certainly sound.

#### THE PLACE FOR DOMESTIC WORK IN THE SECONDARY SCHOOL CURRICULUM.

The only Cookery or Domestic teaching given to girls in the Leeds High School was that taught in the Science lessons by the Science mistress. The girls learnt the principles of Domestic Economy, and were in a good position to profit by an after-school course in that subject.

At the Leeds High School there was a post-school course in Laundry-work and Cookery. Some girls took it while still in the sixth form. These were girls who had passed their examinations or who were going to live at home and were not taking examinations. They formed a minority of the students. The work of the course being quite practical (Laundry and Cookery), was very different from the Domestic Science done in the school itself. But the Science enabled the girls to do the work more intelligently.

A post-school course alone did not really meet the whole need, as so many girls took up some wage-earning occupation after leaving school, and had not the time for a course of this kind. Since, therefore, a girl could not be said to be properly educated unless she had some knowledge of House-craft, it was necessary that instruction in this subject should form part of the ordinary school course. But for the large proportion of girls in Secondary Schools who had to leave at a certain age there was no time in which separate Domestic instruction could be given, while on the other hand the most effective way of teaching science was by the aid of illustrations from everyday life.

#### TRAINING OF TEACHERS.

In addition to her ordinary work in the High School, the witness also taught Science to the students of the Leeds School of Cookery, who were allowed the use of the High School laboratory on three half days a week. Most of these students were preparing for posts as Domestic teachers in Secondary and other schools. The Science instruction they received at the High School had the same special character as the rest of the Science teaching in the school. In addition, some of them went afterwards to the University for a further course of Science under Professor Smithells. It would be much better if they had their Science course first, and then more technical training afterwards.

Although she had left the High School and given up teaching work, the witness had recently been conducting classes on Saturday mornings for teachers in Domestic Science. These were attended solely by Science teachers in Secondary Schools in the West Riding, including eight masters who had girl students under them. The classes were taken in the kitchen laboratory of the High School. Attendance was voluntary, and the intention of the students was not to qualify as Cookery teachers, but to learn the methods of teaching Science followed in the Leeds High School. They had all had a scientific training and probably all had Science degrees. These teachers showed interest, and had come to see the value of introducing household matters into Science teaching.

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Miss MARJORY STEPHENSON, Science Mistress at the School of Domestic Science, Gloucester.

(*Evidence given October 22nd, 1909.*)

#### THE GLOUCESTERSHIRE SCHOOL OF DOMESTIC SCIENCE.

The witness stated that the Gloucestershire School of Domestic Science was primarily a training school for teachers of Domestic Subjects. The students generally found posts in Elementary Schools, but a few went to Secondary Schools. All the students paid fees; there were no scholarships. The school was under the control of a Sub-Committee of the Gloucestershire County Council, and earned grants from the Council, and also from the Board of Education under the domestic training regulations.

Students came generally direct from Secondary Schools at about the age of 18, which was the minimum age of starting. There were a few older ones, between 25 and 30; but it was quite exceptional for a student to have done any teaching before coming to the school. The ordinary course of training lasted for two years or longer; but some students, called "housewives," came for only three or six months. The latter received a training in preparation for home life and were not intending to become teachers.

In the full course there were at present about 40 students in training. Most of them were day students, but there were a number of boarders.

#### THE PLACE OF PRACTICAL WORK IN THE SECONDARY SCHOOL CURRICULUM.

Practical work in its widest sense should form a part of every Secondary School curriculum. The Domestic Subjects proper would then fit in easily. Students should be led up to Domestic teaching by a preliminary course of Science. The Science, however, should have a much more practical basis than at present from quite early in the school. Most children had within them a desire to achieve something which they could see was useful. In the Science work especially, but in other subjects, such as Arithmetic and History, as well, the teaching should be made to have a practical bearing on home life from the commencement.

However, it was not only the Science that needed to be applied to Domestic work. The entire staff of the Secondary School should be led to look at education from a different point of view. The teaching of Art should be definitely applied to Domestic Subjects. If this sort of thing were carried out the ordinary homes might gain in efficiency and beauty, without impairing, but rather improving, the ordinary school course.

The mistake at present was to regard Domestic Subjects as something outside the school. They ought to be in the course, being an important part of a girl's education. Girls who had been brought up at home and allowed to help in the household duties, although not so quick at books as girls who had spent their whole time at school, were very much more intelligent. Again students in training coming from the ordinary Secondary Schools and having had no practical work in their homes, had great difficulty in carrying over their laboratory experience to the kitchen, and *vice versa*, whereas others coming from their homes showed much more intelligence in the Science work. They could see the meaning of a thing much more quickly, though possibly not able to express themselves as easily. Many Secondary School girls were prevented from taking any part in the duties of their own home owing to their heavy school work and evening preparation, for which the only cure would seem to be a reduction in the present number of subjects.

In spite of the real educational value of practical work, girls who give a large proportion of their time to such work did not do so well in examinations as the other girls because they had not the examination "knack." They were, however, ever so much better fitted for life in the world, and the witness would rather recommend them for posts as teachers of practical subjects.

#### POST-SCHOOL COURSES OF DOMESTIC WORK.

An attempt to conduct a post-school course was faced with two problems. The course might be entirely technical, with the object of turning out a good cook, or good housewife, without attempting to give any sort of scientific teaching, or it might consist of a combination of science and technical work.

(1) There were two complaints made about a purely technical course. In the first place, it was looked down upon by the ordinary staff of the school and very often was not understood by the Headmistress, and, the inspection of Domestic Subjects in Secondary Schools being nothing like so stringent as in Elementary Schools, the teacher was often required to do quite impossible things, such as teaching a class of 24 girls, of whom perhaps half were doing Cookery, a quarter Needlework, and a quarter Housewifery. Such a condition, of course, made it impossible to carry on the work satisfactorily. A post-school course often suffered from the fact that, being outside the ordinary school course, the Headmistress gave no attention to it.

(2) The other kind of course was one in Household Economics in which an attempt was made to run simultaneous instruction in Cookery, Laundry-work, and Housewifery, and at the same time elementary Chemistry, Physics, and Hygiene, all in the same year and with definite bearing on each other. The witness knew of such a course, which was started with enthusiasm, but it was found that the girls were taking up so many new subjects

at the same time that they got no practical skill or right scientific attitude at all. The students should of course have been doing science in the ordinary classes of the Secondary School ; but it was surprising how little they had learnt there, even of elementary Science, in spite of the fact that the school had a very well equipped science laboratory.

It was the witness's opinion that a post-school course could not possibly cover Domestic Science in any effective sense unless the pupils had had a really good preparation in Science. Without such preparation a post-school course was almost useless unless restricted to technical work only. It was much better to give a thorough course of technical work than to try too much.

In the post-school course, supposing the teaching in the school itself had been of a practical kind, the work might be as follows :—In the first place a choice would have to be given as between Housewifery and Dressmaking. If they took the former they would have a definite course of Cookery and Laundry-work, giving about two-thirds of the time to the former and one-third to the latter, or perhaps half to one and half to the other. A certain amount of this time would be given to scientific investigation in the laboratory. This course could be very well got into a year, because owing to the practical curriculum through which they had passed in the school itself the girls would be handy with their fingers.

From the educational point of view Laundry-work was very important—more so than Cookery, even. The results were so much more certain. In Cookery, when things went wrong the causes were often quite obscure. In Laundry-work, on the contrary, it was generally possible to find the cause of an imperfection at once. The girl herself could see what was wrong. It was valuable educationally for that reason, and although it might be expected that girls would like Cookery best, they appeared, in fact, to enjoy Laundry quite as much.

Housewifery (including cleaning) had also, for the same reason as Laundry-work, a considerable educational work. It was also very important from the point of view of the housewife that she should understand the proper methods of cleaning, &c. And both these subjects were easily correlated with the Science work in the laboratory, whereas it was much more difficult to correlate cookery. Therefore, although Cookery could not be omitted altogether, it was desirable to take the other, and simpler, subjects first.

#### THE TRAINING OF TEACHERS.

The students from the Gloucester School of Domestic Science only took posts in which they were required to teach merely the Domestic Arts. They never taught Science at all. The teaching of Science and Domestic work by the same teacher was quite a new idea, and there was not much demand at

present for such teachers. It was certainly desirable that the Science teacher should know a good deal about domestic problems, and that the Domestic teacher should know enough science to be able to teach her subjects scientifically. The difficulty would be met in the case of the former by giving a girl during her school life a certain amount of Domestic work. When she went to the University she would be in a much better position to take up her scientific studies. It would be very difficult to introduce any technical teaching into the University because of the risk that, unless the course was a great deal longer, teachers would leave college knowing less Science than at present. On the other hand, if the student had already done practical work before going to the University she was able to do her Science work there very much better. This was greatly to be preferred to an artificial course in which it was attempted to mix up the Science and Domestic work.

Until recently Housecraft was taught in the same way as in the ordinary Elementary School. But that had been altered. Students now began with a term of work in hostels in which they learnt what the ordinary girl used to learn at home, and so gained a general idea of home-making. At the same time they had a course of elementary Physics and Hygiene. After that they came to the kitchen and did Cookery and Laundry-work. Thus they got their general information before taking special subjects.

Some of the students knew very little Science when they came; some none at all. The Science was carefully correlated with the other work, all experiments and examples being taken from materials constantly in use. Witness would like to take a fair amount of Science through the whole course, but she only had the students for four terms, as the time devoted to each principal subject, *i.e.*, Cookery, Laundry and Housewifery, was fixed by the Regulations of the Board of Education, and did not admit of more hours being devoted to Science.

A course of Cookery in which the scientific principles underlying each method of Cookery were taught experimentally before the actual cooking of the dish was attempted had many times been suggested, but was (in witness's opinion) impracticable for the following reasons:—

- (1) The chemical changes involved in, say, the boiling of a leg of mutton or the making of a custard were complicated and obscure, and belonged to a realm of Organic Chemistry in which the knowledge even of experts was very indefinite; the elucidation of such changes to a class with little or no knowledge of Organic Chemistry was therefore a matter of great difficulty.
- (2) But whereas processes simple, from the point of view of the cook, were often complicated from the point of view of the chemist, the converse was frequently also



true ; *e.g.*, the chemical changes taking place in sugar boiling (as applied to the making of elaborate confectionery) could be investigated by a class with comparative ease.

But though strict correlation between Cookery and Science was impracticable, it was quite possible to give a course of elementary Science in which the usual simple experiments in elementary Physics and Chemistry might be amplified but not replaced by experiments bearing directly on practical household work, in which, for example, a lesson on solution might be illustrated by laboratory experiments on the removal of grease, or the economic cooking of vegetables.

The scientific principles underlying Laundry-work, being for the most part simpler than those connected with Cookery, a correlated course of Science and Laundry and cleaning would present fewer difficulties.

A diploma, given at the end of the course, depended mainly on a test in practical work. Students often did not do very well on the theoretical paper owing to lack of practice in dealing with examination papers, but pulled up on the practical work. These students as a rule turned out the more useful afterwards, whatever kind of work they took up.

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Miss MARGARET SWANSON, of the Glasgow School of Art.

*(Evidence given January 26th, 1912.)*

#### NEEDLECRAFT IN SECONDARY SCHOOLS.

The witness considered it desirable that Needlecraft should form part of the education of girls in Secondary Schools during the whole part of school life.

The girl with untrained eyes and untrained hands was mentally crippled. The hand awakened to a sense of skill between 11 and 12 years, the eye accommodated itself to normal vision about the same time. Towards this significant period graded Needlecraft should be given, in which construction and decoration became one by means of colour and form. No white thread on a white background should be used, but large, frank stitchey in coloured threads on a contrasting background. As a method of instruction, Needlecraft should form an essential part of school work.

The reason for teaching a subject must be found in its social utility, for, if a subject cannot justify itself as requisite to the training of good members of society, it is not an essential subject.

The needs of the individual and the wants of society were really different phases of the same demand. If the school did not train the fingers and the eyes (sense training), and if

this training were indispensable to intellectual development, there was absolute necessity for the school undertaking this particular kind of training.

A mere specimen of stitchery has no motive, but "make a collar," "make a needlecase," has motive. This gave pleasure and tended to show the working of the mind. The teacher had no business to do the thinking for the child. The girl should do her own thinking, should have her mind working free to face the situation; blundering, triumphing, above all gathering experience and knowledge from her own personal problem.

Then, at 12 years of age, the girl brings, as part and parcel of her individuality, a joyful memory of colour and simple construction, gathered in the Elementary School or in the primary part of a Secondary School, and forming the groundwork from which her adolescence evolves.

#### PREPARATORY COURSE TO THE SECONDARY SCHOOL IN NEEDLECRAFT, 6-12 YEARS.

##### 1st Division. Ages, 6-8 years.

1. Decoration and construction become one in the application of *tacking* to all kinds of mats in soft unbleached calico, with cotton embroidery thread and large eyed, sharp needles, No. 3.

2. Top-sewing, applied as above to bags—sachets.

3. Hemming (slanting tacking) applied to lap-bags-work, aprons.

4. Knitting: (a) garter stitch, applied to scarf, slipper, kettle holder,  
(b) plain and purl, applied to vests of all kinds.

5. Cutting out—neckband and wristband (in paper).

##### 2nd Division. Ages, 8-10 years.

1. Introduction of dyed fabric (coloured calico) along with the natural, unbleached calico, and the two combined in the construction of nightdress cases, cushion slips, soiled linen bags, hence—sew and fell seam,

or

back stitch and fell,

or

run and fell seam.

2. Pleating as a constructive exercise applied to overalls, cooking sleeves, cooking aprons, tunics.

3. Introduction of flannel and herring boning, applied to needlecases.

4. Knitting: (a) plain and purl. Casting on and off with two needles applied to cuffs.
- (b) Casting on and off with three needles, as for stocking intakes, applied to bachelor cosy, pair of sleeves or jersey.
5. Cutting out—  
Neckband, wristband, waist and armhole (in paper).

*3rd Division. 10—12 years.*

1. Fresh texture—linen—introduced and stitchery applied to the defence and decoration of raw edges, hence button-hole stitchery in its various stages:—

- (1) Blanket stitch.
- (2) Embroidery.
- (3) Button-hole proper, applied to collars, bookmarkers, mats.

2. Material applied to the defence of raw edges, hence binding, loops and strengthening strip applied to kettle holders, bibs, binders, bags.

3. Flannel seams, applied to infant's first jacket, vests.

4. Darning (mystery of fabric unravelled) applied in the first instance as a decorative motif to table and toilet runners, and serving as latches to bags.

5. Cutting out—

Slip bodice type, with sewing on of buttons.

6. Knitting: (a) Setting heel of stocking, turning and taking in, applied to pair of child's socks.

(b) All previous stitches, with addition of intakes of toe and finishing off, applied to stockings or socks.

## SECONDARY SCHOOL.

### *Suggested Scheme for Four Years' Course.*

#### *1st Year's Course.*

*Age:—12+ — 13+.*

1. Art of general repair applied to calico and flannel. (Note from the simple cutting out types that fresh constructions must be considered in relation to its wear and tear; that the unobtrusive quality of good repair may be seized through the love of decoration and the utilitarian need approached soundly.)

Coverlets, cushions, bags, &c. may illustrate this.

2. Cutting out—sleeve type, connected with the slip bodice type of the preparatory period, and forming the nucleus of blouses, dressing jackets, children's coats, &c.

3. General talk (with patterns of calico and flannel, self-toned and coloured) on texture—weaving and dyeing.

*2nd Year's Course.*

*Ages :—13 + — 14 +.*

1. Art of general repair applied to printed material and serge, tweeds, &c. (approached as above). Cosies, babies' feeders, aprons, &c. may illustrate this.

2.—(a) Cutting-out—skirt type, connected with the bodice type into overalls, tunics of all kinds, chemises; connected with bodice type and sleeve type into night-dresses, simple dresses, gowns, &c.

(b) Machining.

3. The making of simple, straight line pattern, and the adaptation of stitchery to various materials as fitments for personal or household use. Talk on printed fabrics. Illustrated on curtains, coverlets, pincushions, and the decoration of any of the above—1 and 2.

*3rd Year's Course.*

*Ages :—14 + —15 +.*

1. Art of general repair applied to linen of all kinds. (Note shirting and distinguish between the two divisions of repair, *i.e.*, in the first division the insertion of a better piece of fabric into and around a hole, and in the second division, the renewing of the entire worn portion, as collars, cuffs, sleeves, &c.)

2.—(a) Cutting-out—drawers type.

(b) Machining all long seams.

3. Kind and quality of material, with probable cost, should be encouraged along economical lines. The use of silks, satins, and velvets should be shunned, in preference to the beauty and utility of linen crashes, dyed cottons, sheeting, union (flannel union is a mixture of wool and cotton; cotton union is a mixture of cotton and linen).

4. The making of simple geometric pattern and decoration of garments and household articles, illustrated on the seams, hems, and general construction.

*4th Year's Course.*

*Ages :—15 + —16 +.*

1. General repair. (Note sewing on of buttons, button-holes, hooks and eyes, loops, latchets, and the various labour-saving appliances in the market of to-day, *i.e.*, patent fasteners of many kinds, belting, &c.)

2. Cutting out—expansion of any of the given types, as, for example, from drawers type—knickers for drill, bathing, riding, &c., or child's first trousers in drills, cottons, flannels, &c.

3. The making of pattern and decoration (embroidery) of garments and household articles.

4. Machining all long and monotonous seams.

At this period of adolescence—the awakening of mind—the teacher can get the girl to take an interest in the hygiene of clothing and household furnishing. Through “doing” with the needle, interest in science and philosophy becomes the natural superstructure of Art and Craft.

It is advisable that teachers should have little stores of braids, tapes, odds and ends of materials to serve as pipings and finishings to the articles made. They should have pattern books of inexpensive useful, material, in linen, cotton, flannel; shade cards of woollen and cotton threads, &c.

Knitting socks, stockings, lace insertion, and lace edging, as well as re-footing stockings, &c., should be known by all girls in Secondary Schools.

Mrs. WOODHOUSE, Headmistress of Clapham High School.

(*Evidence given January 26th, 1912.*)

The witness stated that there were 530 pupils and students in the School, and that in addition there had been up to June 1911 students from King's College, who had for three years taken their practical training on two whole days of the week under the Domestic Science Teacher. The School contains very few girls from Public Elementary Schools. The leaving age is 18 or 19.

The witness expressed her conviction that practical work induces an intelligence of much value to school pupils of any age. She had therefore secured a systematic place for practical training *throughout* the Middle and Lower Schools.

#### HANDWORK IN THE LOWER AND MIDDLE SCHOOL.

In the first, second, and third forms, in addition to Knitting and Sewing lessons, to daily Music practice, to Drawing and to practical Arithmetic and Geometry, every child between the ages of 7 and 12 was given a training in Modelling and clay, paper and cardboard work, in weaving and basketry and in elementary Wood-work. The latter subject was done in the schoolroom, the pupils having trays for the purpose. In the Middle and Upper School, where children's ages range from 12 to 16, in addition to the Cardboard-modelling, practical courses of Needlework, Drawing, Gardening, Geometry, elementary Physics and Practical Chemistry have their place; and must influence Housecraft. As these subjects were not hampered by external examinations they were of greater educational value.

## THE QUESTION OF HOUSECRAFT.

The witness considered that owing to the present claims of examination it was difficult to plan an ideal course. For girls between 16 and 18 Housecraft should have its place, but in the Clapham High School, Housecraft courses were postponed in the majority of cases till after the close of the school course. It was found that in the post-scholastic course, a longer period of teaching and the opportunity of more practice secured good results.

The effect of this postponement is that the number taking the course is limited. About 200 girls had passed through the course hitherto. Within the last few years, however, an increasing number were following the course before leaving school. These were girls who would probably neither prepare for nor profit by external examinations. The witness considered that for girls of this type a good English and Modern Language course with some branches of Housecraft, such as Cookery, Household Cleaning and Hygiene, provided the best training. Further development in this direction was expected.

There was, in connection with the School, a residential house containing 16 rooms, many of which, such as sitting-rooms, bedroom, bathroom, kitchen, scullery, &c., afforded practice in Household Management for the Domestic Science Students and Pupils.

## EXPERIMENTAL COURSES SUBSTITUTED DURING THE PAST YEAR.

(1) For girls who were not quite up to the School's average standard, and had had no training in lower school Handicraft, nor a preparation in Physics and Chemistry, a housecraft course had been planned with a special view of awakening and quickening their intelligence by means of domestic in addition to academic subjects. The results had been quite satisfactory.

(2) There was another class of girls between 16 and 17 who had gone through a good lower school course of Handicraft and also a three years' course in Physics and Chemistry. These were taking a course in Housecraft based upon the knowledge gained in the Physics and Chemistry lessons. From such a source the future teacher of domestic science and arts should have a broader outlook upon the problems with which she will have to deal.

## HOUSECRAFT IN SCHOOLS WHERE THE LEAVING AGE IS 16.

In such schools as these, the witness advocated concurrent courses in Science and Domestic Arts from the age of 13 to 16. The witness said "concurrent" rather than "correlated," because she was informed that few teachers would correlate

these subjects until more research work on these lines had been accomplished.

The witness emphasised the importance of girls doing some domestic work at home. The experience that would thus be gained would be valuable.

#### GARDENING.

In answer to a question, witness said that some 80 girls did Gardening as a voluntary subject under a member of the Science Staff of the School, who had been trained at Swanley Horticultural College. Only a few of these girls were excused on account of health. All who took Gardening thoroughly enjoyed it.

#### HOUSECRAFT AND EXAMINATION.

The witness was of opinion that more practical training could be given about the ages of 17 and 18 were it not for the pressure of examination.

This difficulty would be lessened if in any future Leaving School record an entry stating that a course of Domestic subjects had been followed could have a value. The Matriculation certificates also might contain a record that the candidate had taken these subjects.

The witness was compelled to make work in the majority of cases post-scholastic because of the examination difficulty. She would advocate a systematic and continuous course of Handicraft and Practical Science in Lower and Middle Schools, in order to facilitate the acquisition of certain branches of Housecraft to be taken sometime during the last two years of school life (from 16 to 18).

This of course would necessitate considerable addition to equipment and teaching staff.

#### THE QUESTION OF THE TEACHER.

There was no lack of teachers with good qualifications in Domestic Arts, but it was hard to find this combined with an acquaintance with the ideals and organisation of secondary schools.

Further, with regard to the Handwork taken by the younger children (Clay Modelling, &c), a first-class teacher was essential, and great difficulty was experienced here too. In this School the Handwork was entrusted to a trained mistress with good academic qualifications, and with special qualifications for each branch of Handwork taught.

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### C.—Medical Witnesses.

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DR. ALFRED A. MUMFORD, M.D., M.R.C.S., Medical Officer to the Manchester Grammar School.

(*Evidence given December 20th, 1911.*)

The witness explained that his evidence was based on the results of about three years' practical experience as Medical Adviser and Medical Officer to the Manchester Grammar School. He devoted about two-thirds of his time to this school work, the rest of his time being given to hospital and consulting practice.

#### DUTIES OF THE MEDICAL OFFICER.

As Medical Officer, the witness stated that he was constantly in touch with the masters of the school and had the privilege of sitting in the classrooms and watching the attitude of the boys during lessons. This greatly helped him in forming an opinion as to how far they were physically capable of benefitting by the instruction and as to whether any modification of the existing conditions was needed.

He examined all the new boys, and kept a continuous record of the physical condition of every boy in the school. Each boy was weighed and measured every year, and the results entered on the back of the card which contained the boys' *school* record since his entry to the school.

If a form master was not satisfied with the progress of a boy, he communicated first with the High Master and then with the Medical Officer, who either examined the boy or watched him at work in his class, and made a report which led usually to consultation with parents.

It was not part of the duties of the Medical Officer to treat any complaints from which the boys might be suffering. If he found anything wrong with a boy he reported to the High Master, who communicated with the parents.

#### THE NEED FOR MANUAL TRAINING.

It should be regarded as an essential part of the functions of any Secondary School to teach every pupil to use his hands and to think with his hands. Manual work did not only give skill in using the hands, but also provided a fine mental training. The boy had to measure, calculate, and construct, by all of which he learnt things which were not necessarily brought out by his other work.

Witness was of opinion that the Handwork at present done in the earlier ages of school life (say, up to 13) was generally satisfactory: but that after that, it should be applied in a



practical way to meeting actual requirements of the world in which the boys lived. Useful work was done in connection with school camp, in making the scenery for school plays, and in other similar ways. It was also desirable that the Manual work should be closely associated with the Drawing and Science work. The boy should make the things required for his experiments in Physics.

The normal boy in the Manchester Grammar School dropped his Manual work at about the age of 14. There was not the time to spare for this work in the later years. If there were time, it would be desirable to continue the work throughout the school, and in a boarding school this could be done in the form of out of school activities. But in a day school, though many boys did in fact do such work at home or in voluntary classes of their own free will, it was impossible to insist on it owing to the demands of scholarship and other examinations.

In this connection the witness considered that in forming an opinion of a boy's merits, and in making public commendation by means of Prizes, Form Place, &c., the judgment should be based not solely on his attainments in a particular branch of work, such as Classics or Mathematics, but on his all-round abilities, regard being paid to anything he had done for the honour of the school, whether on the scholastic, the social, the manual, or the physical side. The present system of dwelling very largely on attainments in the school-book subjects was narrowing in its effect, and was demoralising to all but the limited number who had high abilities in the special branches of work covered by the scholarship examinations. It picked out the specialists in language capacity, and discouraged the others from aiming as high as they might.

#### THE RETARDED DEVELOPMENT OF SOME SECONDARY SCHOOL PUPILS.

The witness produced diagrams showing the age distribution in different Forms in the Manchester Grammar School, and pointed out that in every class there was an age range of four, or even five years. He had also classified the boys according to their abilities in Mathematics, without regard to their position in other Forms, *e.g.*, Classics, Modern Languages, Science, &c., and still found the same range of four or five years in the groups of boys of similar attainments. He had endeavoured to discover the reasons for this age range by a careful consideration of the work of the precocious and of the backward boys.

The first conclusion he drew was, that so far as the upper part of the school was concerned, an age range of four or five years was not in itself a wrong state of affairs in day schools considering the irregularity of school attendance and the unorganised condition of previous schooling. So long as a boy

had the ability to reach the top of the school, the fact that he got there at a rather late age did not matter very much.

The really backward, or retarded, boys were those who under present conditions could never reach the upper part of the school at all. They were to be found at 15 or 16 years of age still in the lower part of the school, and quite unable to make any progress on the lines of the ordinary literary curriculum, either on the modern side or the classical side. They simply could not learn by the ordinary methods now adopted. As a general rule, it might be taken that if a boy had reached the age of 14 and was a year and a half or two years behind the average of his class, it was almost impossible for him to catch up by means of the regular syllabus. The age of 14 was a very important epoch in a boy's life. His powers began to increase both in manual and intellectual directions. He now began really to use his previous acquirements for his own conscious ends.

In trying to ascertain the cause of this retardedness in school attainments in certain boys, the witness had carefully examined both their present condition and, when possible, the complete history of their past illnesses, and he was convinced that a large amount of the backwardness was due, not to innate physiological defects, but to illness in very early life interfering with brain or body development, or causing much absence from school.

At the same time, although much of the present retardedness of boys was avoidable in so far as illnesses in infancy and early childhood might be prevented, and although there was no doubt that a diminution of infectious diseases had already taken place in the middle and upper working classes to an enormous extent, yet there were still many boys who, in spite of having had no serious illness, were still backward. For this reason the difficulty appeared to be one that would always be present to some extent. The capacity to form an abstract idea and to follow description by language unless accompanied by practical handling and seeing the objects referred to, was a gift which was absent in the case of many practical minds that were yet capable of a high standard of artistic, scientific, or mechanical work.

#### SPECIAL TREATMENT FOR RETARDED BOYS.

Witness was of opinion that the failure of the present system of education with these retarded or backward boys was due to the fact that it endeavoured to push them forward, on the same lines of work as the other boys, and expected them to regain their lost time. The impossibility of succeeding in this often made masters lose interest and heart in the intellectual side of their work, though it was only due to them to say that they still took a personal interest in other sides of the boys' nature—in their games, &c.

The consequence was that the more backward boy, finding himself at the age of 14 or 15 still in the lower Forms, felt that he was a failure. He, too, was completely disheartened, and very often left school without having gained much benefit. Such boys, however, were capable of being trained to good effect, and many of them, even though they had failed completely in bookwork at school, turned out well in their after life. The witness was convinced by his knowledge of the after careers of boys of this type that much innate practical, scientific and artistic ability was running to seed through an inappropriate school training, and the failure to call out the natural and innate powers.

It was necessary therefore to find some different type of training for these boys. It should not be admitted that they were failures simply because they could not progress on the orthodox lines, and it would be highly undesirable and unfair to attempt to keep them out of the Secondary Schools altogether. But as soon as it was clear that they had been retarded in language methods, or they were unable to progress sufficiently on language lines, they should be transferred to a course of education specially adapted to their needs. If this were done, it was probable that many of them, instead of leaving school at 15 or 16 with a sense of being unable to do anything, would remain till a later age with great profit to themselves and to the community at large.

Those boys were slow in understanding abstract ideas, had less of verbal imagination, and required more effort on the part of the teacher. But when they were trained on their own line, and spent two years on what was usually done in one, then they made good progress. Further, when a boy of this type was put to Wood-work, Drawing, or something involving expression in other media than language, he often made quite a creditable performance. As a rule, the retarded boy was slower than the others even in Manual work. Just as in Language work he had left behind him the stage at which the finer imitative movements of language are most readily acquired, so in Manual work he no longer possessed the ready facility of acquiring control over the finer movements of the fingers. The dawn of adolescence brought in the development of the larger muscles and the desire for larger powers in life. Still there were cases among these apparently backward boys in which they reached a very high standard in this work.

It was necessary therefore that the course of education for retarded boys should comprise plenty of Manual work, including drawing, measurements, and other things of constructional nature, also observational work. They should not have frequent changes of subject or of master; for they lacked alertness, and, above all, it should be remembered that they could not make such rapid progress as the boys of average endowment.

In the Manchester Grammar School, a group of these retarded boys had been formed into a separate class. They were diverted from the ordinary school course at about 14 or 15, and were given a special curriculum of which Manual work of all kinds was a prominent characteristic. This was organised to enable them to regain confidence in themselves, for they had previously been stranded in lower forms with boys much younger than themselves.

The average age of the pupils of this class was about  $15\frac{1}{2}$ . About three-quarters of the boys were between  $14\frac{1}{2}$  and  $16\frac{1}{2}$ ; all were over 14. This form was not to be regarded as a Dunces' Class and everything possible was done to avoid the idea that the boys in it were inferior to the others. This was rendered easier by the fact that in games and in the gymnasium the form took a good position, and were proud of it. When the special class was first started there was a tendency to look down upon it as something inferior. That was due to the fact that it was created by taking out the boys who had proved failures in the ordinary classes. If such boys could have been taken at a still earlier age, say 14, and put into a third "side" of the school alternative to the modern and classical sides, and called by some name that did not imply inferiority, say, English or Science, there need be no real memory of past failure and the work accomplished would be more enduring. It would not be possible for either the Medical Officer or the master to say directly a boy entered the school whether he would or not do well on the ordinary lines. But any experienced master should be able to form an accurate judgment on this point in regard to a boy of 13 or 14 after seeing his work for twelve months, especially when he took into account work done with other masters.

In reply to questions, the witness said that the retarded class did not include any ex-elementary scholarship-holding pupils. On the contrary, it had been found that the scholarship-holding boys from the Elementary Schools helped to keep up the tone of the school both physically and morally. They entered between 11 and 13. Being selected by the school authorities themselves from a large number of applicants by a combined system of examination and interview very much on the lines of the Admiralty Cadet system, they were naturally "picked specimens," while the fee-paying boys were more heterogeneous in ability and physique.

The scheme of work had not yet been finally planned out. It was being tried experimentally with a view to learning what was best. It meant throwing over a good deal of the old curriculum; but it would be fatal to neglect the literary education of the boys entirely. They would continue their studies in Language, particularly English Literature and History, and Mathematics, though the teaching should be so framed as to make an appeal different to that used for the more purely

scholarship boy. The retarded boys were not incapable of learning literary subjects provided the teaching was adapted to their interests and their intelligence. The appeal of such stirring subjects as the Indian Mutiny and Mr. Henry Newbolt's poems never failed to meet with ready response. It appealed to their manhood, and having missed their young boyhood we must not miss the appeal to their young manhood. Again, under the ordinary methods of teaching a foreign language, being unable to grasp all the master was trying to teach, they lost hold and gave up the attempt; but it should be still possible so to arrange the language teaching as to retain their interest. If it was determined to continue a modicum of French it should be by a master who could convey to the boy's mind a living picture of France and of the meaning of French literature. It could not be done on the lines of the ordinary French Grammar.

The Mathematics should be of a more practical kind than usual, including surveying, measuring fields, plotting buildings, &c.

The boys would also go on with their Physics, in which, although rather slow in grasping the teacher's meaning, they were able to achieve definite results and to derive much benefit.

The time given to Handwork, excluding Art and Science, was about  $3\frac{1}{2}$  hours a week, that is to say, about twice as much as was devoted to this subject in the ordinary Forms. It was desirable that with these boys the Manual work should be carried beyond its present limits and become occupational in character. It was useless to try and teach them Wood-work on Sloyd lines. The great value of Manual work for such boys lay not in the fact that they had special aptitude in cutting wood with great accuracy and care, but that they were able to see what result it was that they were setting out to achieve; they should feel that they had something definite to strive after, and it should be insisted upon that they secured the aim in view. To obtain the full value of this work it was necessary to set the boys to make larger and more socially useful things than were generally comprised in a Sloyd course. Such things, for example as the scenery for school plays and equipment for school camps roused their interest and stimulated them to do their best work.

Although this method of dealing with the retarded boys was still in its infancy, sufficient experience had been gained to show that it would be of great advantage to them. In the brief space of three months the whole attitude of the class changed.

#### HYGIENE AS A SCHOOL SUBJECT.

The witness stated that in addition to his ordinary duties as Medical Officer he taught Hygiene in the Upper 5th Form and in the Special class that had been established for retarded boys.

His experience was that this subject had distinct educational value for all boys and that it was of special assistance in the training of the more backward ones, when it dealt with their natural powers and daily experience.

The syllabus was framed on broad lines and consisted of talks upon such things as games, hours of sleep, time of rising in the morning, nature and use of food, care of the teeth, &c.; the whole of the teaching being brought into close relation with daily life. The course found practical expression in various branches of usefulness in school society. The Ambulance Corps was on duty at the Sports and in all the School Camps. In every bathing parade at Camp, boys who had qualified for Life-saving Certificate or Medal were on duty with definite powers of control and responsibility. As far as possible the work was associated with what had already been done in Physics and Chemistry.

Practical Hygiene in Secondary Schools should not be merely a new subject in the Curriculum, but should be tested by the activity of the "Health Conscience" throughout the School.

This needs *rousing, organising and maintaining*, among masters, pupils and parents, for Hygiene is the "Art" as well as the "Science" of right living, and can only be learnt by constant practice.

The "Health Conscience of the School" needs to be so organised that it can at once focus attention on any failure of right living, and show its reprobation of this as publicly as it does of other bad conduct, and it should show its approval of right living as publicly as it does of good conduct and diligence in class work. It cannot do this till equal prominence is given to right living or "School Virtue" as is given to a boy's place in class attainment. In awarding form prizes at the end of the term, the *general* life of the boy should be publicly taken into consideration as well as his class work.

The following methods might be used for organising the Health Conscience.

Records should be kept of—

Conduct and Progress in *Compulsory* Physical Exercises,  
Gymnastic and Swedish work.

Participation in *Voluntary* School Activities.

School Matches and Harrier runs, &c.

Voluntary Gymnasium, Ambulance Corps.

Swimming and Life Saving work.

Open-air Camps.

Officers' Training Corps.

Musical and Dramatic Activities of School.

To secure fairness, and protect those physically weak, and for the benefit of those drawing up the "School Virtue" list, to distinguish them from the "slack" and lazy ones, each *master* must have a record card with notes added of any physical imperfection. In cases where hard physical exercise is inadvisable, other public work, particularly Voluntary Manual work or Natural History contribution to School life, should be accepted instead.

Emulation should be stimulated between different School Houses, or different School forms, when the form is chosen as the unit. All punishments should detract from the total marks for "School Virtue" assigned to the House. This will help masters to analyse the effect of punishments on boys.

The Best Boys are very keen to take up the life of the School outside the class room; many masters are also very keen. The "Health Conscience" and marks for "School Virtue" are a help to both these, and will permeate the whole School.

The establishment of Compulsory Games does not insure organised and active health conscience unless attention is constantly publicly directed to the obedience to or disregard of such health conscience.

High marks for School Virtue are often gained by backward boys, who are thus encouraged in other school work. They are helped to gain that self-reliance and self-knowledge which is the most valuable part of School life.

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#### ADDENDA TO DR. MUMFORD'S EVIDENCE.

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##### *Addendum A.*

##### COMPARISON BETWEEN THE PRESENT PHYSICAL CONDITION OF SCHOOL BOYS AND THAT OF THIRTY YEARS AGO.

The witness stated that he had compared the health of the boys at the school to-day with that of thirty years ago, basing his comparison on a thorough examination of 7,000 measurements. He found that the boys of the present time were taller, heavier, and slightly bigger in the chest than those of former days, but they had not quite the same muscular development. The present day improvement in physique disappeared after the age of 17. This was partly due to the increasing stress of examination and partly to the non-retention of boys not working for scholarships, and to the large number of ex-elementary school boys now entering the upper part of the school who had to work very hard to secure scholarships to the University. The effect of this ultimately in the manhood of the boy was under consideration.

The keenness, vigour and activity of the boys had also improved very considerably. It was estimated, however, that there was still about one-third to one-half of the boys now in the school who were not living a sufficiently vigorous life. These boys the witness believed could be stimulated by an increased amount of public approbation and reprobation of the measures taken to secure health.

## Addendum B.

SUMMARY OF DIFFERENCES IN PHYSICAL DEVELOPMENT OF THE BOYS AT THE MANCHESTER GRAMMAR SCHOOL DURING A PERIOD 1881-86, AS COMPARED WITH A PERIOD 1905-10.

Age.	Height in Inches.		Weight in Lbs.		Chest Girth in Inches.		Forearm in Inches.		Upper Arm in Inches.			
	1881-86.	1905-10.	Diff.	1881-86.	1905-10.	Diff.	1881-86.	1905-10.	Diff.	1881-86.	1905-10.	Diff.
10-11	53.2	52.94	- 0.26	65.3	65.59	+ 0.29	24.9	24.68	- 0.22	7.81	7.60	- 0.21
11-12	54.38	54.99	+ 0.61	69.28	72.05	+ 2.77	25.21	25.38	+ 0.17	7.79	7.99	+ 0.20
12-13	55.94	56.70	+ 0.76	74.4	77.3	+ 2.9	25.92	25.93	+ 0.01	7.96	7.99	+ 0.03
13-14	57.77	58.84	+ 1.07	81.01	85.47	+ 4.46	26.72	27.05	+ 0.33	8.28	8.29	+ 0.01
14-15	59.82	61.08	+ 1.26	89.99	95.15	+ 5.16	27.71	28.17	+ 0.46	8.63	8.69	+ 0.06
15-16	62.16	63.4	+ 1.24	101.41	105.9	+ 4.49	29.26	29.56	+ 0.30	9.08	9.09	+ 0.01
16-17	63.84	65.35	+ 1.51	109.65	117.9	+ 8.25	30.06	30.91	+ 0.85	9.413	9.53	+ 0.117
17-18	65.88	66.47	+ 0.59	119.36	124.84	+ 5.48	31.3	31.85	+ 0.55	9.80	9.79	- 0.01

A plus sign indicates an improvement. A minus sign a deterioration. Averages only are compared. Ages 9-10, 18-19, and 19-20 left out, as the figures are too few to afford very reliable results. These figures are to be found in the detailed analysis.



*Addendum C.*

COMPARISON OF EMPLOYMENTS OF PARENTS OF NEARLY 1,300 MANCHESTER GRAMMAR SCHOOL BOYS IN PERIODS 1879-1881 AND 1905-1907.

Taken consecutively from the Admission Register.

	1879-81.	1905-7.
<b>Professional:—</b>		
Higher Government Officials, Army, Navy, &c. -	9	9
Ministers of religion - - - - -	83	42
Legal profession - - - - -	15	25
Medicine - - - - -	33	41
Dentists - - - - -	9	5
Accountants - - - - -	23	18
Stockbrokers - - - - -	5	3
Teaching and allied - - - - -	29	59
Land agents, architects, surveyors, engineers, &c.	80	100
	} 22.2 per cent.	} 23.5 per cent.
<b>Class Total</b> - - - - -	<b>286</b>	<b>302</b>
<b>Commercial:—</b>		
Wholesale manufacturers, &c. - - - - -	188	109
Merchants, shippers, yarn agents, &c. - - - - -	243	213
Cashiers, managers, secretaries, travellers, warehousemen and inspectors.	167	282
Retail traders, shop assistants, plumbers, pawnbrokers, &c.	142	137
Licensed victuallers, hotel keepers, &c. - - - - -	44	35
Printers, publishers, journalists, &c. - - - - -	15	28
Builders, contractors, &c. - - - - -	25	15
Metal workers, ironfounders and brass finishers. &c.	24	7
Artizans and mechanics - - - - -	26	27
	} 68 per cent.	} 66 per cent.
<b>Class Total</b> - - - - -	<b>874</b>	<b>853</b>
Farmers, agriculturalists, &c. - - - - -	28	12
Widows - - - - -	58	75
Out of business - - - - -	30	35
Unclassified - - - - -	9	8
<b>Class Total</b> - - - - -	<b>125</b>	<b>130</b>
<b>Total number of Parents</b> - - - - -	<b>1,285</b>	<b>1,285</b>

Dr. W. H. R. RIVERS, M.D., F.R.S., Fellow of St. John's College, Cambridge.

(Evidence given June 5th, 1912.)

Witness believed that in the present state of our knowledge Psychology and Physiology could help very little in the solution of practical problems concerned with the influence of Manual

training on mental efficiency. One could say that highly skilled movements of the hand depend upon highly organised nervous arrangements in the brain and that skilled exercise of the hand influences the functions of the brain, but there was little justification for going beyond such a general statement.

Witness thought that the reference to the brain in such a proposition as "the effect on the brain of the education of the hand" was misplaced. Through observation and experiment we already knew something, and may hope to learn much more, about the relation between Manual training and mental efficiency, but we had practically no exact knowledge about the nature of the changes in the brain which act as intermediate links in this relation. To talk about changes in the brain in this connection is to substitute processes about which we know practically nothing, and are not likely to know much more in the immediate future, for processes which are readily open to investigation and about which we already have some knowledge.

Witness considered that any further advance must come from experimental research and believed that special schools were the natural places in which to carry out such research. Suitable schools already existed for the study of methods of teaching, and all that was needed was that these schools should be more definitely recognised by the authorities and should be utilised for the experimental investigation of problems such as those about which the Committee were now seeking information.

In answer to questions, witness thought that it would be an advantage if such schools were attached to Universities. He was doubtful if Handwork did much to influence the general power of expression, except in the form of drawing, when it might become an instrument of the utmost importance in stimulating mental efficiency.

Witness did not know that it was possible to recognise stages of brain development corresponding to supposed stages of mental development, except in a crude way very early in life.

He thought that the cessation of the effect of Manual training on mental efficiency about the age of 14, which was said to occur, was largely due to social causes. At this age a child would be likely to consider how far such training stood in any relation to his future career, and if he recognised no such relation the work would probably fail to arouse his interest. If a child was interested in Manual training, it might promote his general mental efficiency, but there was no reason to suppose that his capacity for "book subjects" would be affected unless there was something in the Manual training which aroused his interest in these subjects.

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## D.—GENERAL.

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Lieut.-General Sir ROBERT BADEN-POWELL, K.C.B., &c.

*(Evidence given November 15th, 1911.)*

### EDUCATIONAL ENCOURAGEMENT OF BOY SCOUTS.

The witness stated that the Boy Scout organization took no direct part in providing education for the boys in any subject; but its principle was not so much to teach as to encourage the boys to learn by offering rewards, in the shape of badges, for passing certain tests in particular subjects, and to leave it to them to acquire as best they might the knowledge they needed to enable them to satisfy the tests.

Proficiency Badges were given in 41 different subjects; but before entering for any of these badges a boy must have qualified as a Second-class Scout, for which he had to pass a test including elementary cooking and firelighting, in addition to elementary woodcraft, signalling, the moral code of the "Scout Law," and to have a balance of at least sixpence in a savings bank.

By passing a certain number (any six) of the tests a boy earned a special badge. The tests were conducted by small boards of examiners appointed for the different districts.

Within the first two years about 184,000 proficiency badges had been awarded, a fact which showed that the boys were ready to work if they had some little reward to look forward to.

[A list of the subjects in which Proficiency Badges are awarded is contained in an addendum to this summary. Further information as to the requirements in the various subjects may be obtained from the Boy Scout Regulations\*, or, in more detail, from "Boy Scout Tests and how to pass them."†]

### BOY SCOUTS AND CONTINUATION SCHOOLS.

The witness said that the Boy Scouts organization endeavoured to work in co-operation with the Continuation Schools whenever possible, and that in several places (notably at Manchester) the Education Authorities had already made special provision for the Boy Scouts, while in many other places inquiries were being made in order to ascertain how the schools could be adapted to give the desired training.‡

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\* Obtainable from the Secretary, 116, Victoria Street, Westminster, S.W.

† James Brown and Son, Glasgow. Price 1s. nett.

‡ With reference to the above, Lieut.-General Sir Robert Baden-Powell writes, November 1912: "This has all greatly developed since this evidence was given."

The organization were anxious to help the schools in any possible way, and with this intention it was proposed that all the existing Proficiency Badges should be made second-class badges and that first-class badges should be given in each subject on a higher test where the boy had studied it at a Continuation School. This would encourage boys to go to the Continuation Schools for instruction in the Scout subjects, and once there they could no doubt be induced to take up other branches of work.

The effect of getting the Boy Scouts into the Continuation Schools was seen in the case of a class at Manchester which had more than doubled its numbers (*i.e.*, from 70 to 150) during the two months since the Boy Scouts came in.

It was preferred that all the members of a troop or patrol should go to the evening school together and so continue to work under their own Boy Leaders; but this was not insisted upon if the Education Authority did not approve. The Scout Master was not bound to go to the classes with the boys; but when the whole troop went, he commonly went with them, and that was what it was hoped they would do.

The whole troop were not expected to take exactly the same subjects; but each troop was divided into patrols of eight boys, who were as a rule of about the same age, and it was often found convenient for the whole patrol to take a subject in common.

In London, boys under 14 were not allowed to attend the evening schools unless they obtained from the headmaster of their day school a certificate that such attendance would not involve undue strain. The witness was of opinion, on the testimony of schoolmasters, that the work done by boys in the day school was not sufficiently arduous to prevent them attending classes in the evening provided their work then was chiefly manual.

#### INFLUENCE OF SCOUT WORK ON THE SCHOOL EDUCATION OF BOYS.

There was evidence that the things the boys did as Boy Scouts were re-acting favourably on their school work. Many schoolmasters had stated that it had made a great difference in the way the boys did their school work. The witness hoped that it would be possible to associate more closely the work of the school with the outside occupations.

#### COOKERY AND NEEDLEWORK FOR BOYS.

Boy Scouts were encouraged to learn a certain amount of Cookery and Sewing, because this helped to make them handy and useful in after-life and enabled them to look after themselves when in the field. There was no doubt that many deaths

amongst soldiers during the South African War were attributable to the fact that so many of the men did not know how to look after themselves and could not cook their own food properly. Consequently cooking had a prominent place in the training of a Boy Scout. In order to qualify as a Second-class Scout, which he must do before entering for any of the Proficiency Badges, he must, amongst other things, be able to "lay and light a wood fire in the open, using not more than two matches," and "cook a quarter of a pound of meat and two potatoes without cooking utensils other than the regulation billy, in the open, over camp fire, if possible."<sup>\*</sup>

For a First-class Scout a more advanced cookery test was prescribed. The test for the Proficiency Badge in cookery was as follows:—"Must be able to light a fire and make a cooking-place with a few bricks or logs, cook the following dishes: Irish stew, vegetables, omelet, rice pudding, or any dishes which the examiner may consider equivalent; make tea, coffee, or cocoa; mix dough and bake bread in oven, or make a 'damper' or 'twist' (round stake) at a camp fire; carve properly and hand plates and dishes correctly to people at table."<sup>\*</sup>

The witness was of opinion that it would be very profitable to teach Cookery to boys in Secondary Schools, and he believed that it would be practicable to introduce such teaching into all such schools, of whatever type. It would not take much time, and would be of considerable value to the boys. Further, in addition to its general usefulness, it was to be noticed that there were a good number of openings for boys who had received such instruction, especially in the cooking departments of large catering firms. Such firms had already shown a desire to get Boy Scouts, who knew something of the work.

#### A NEW AGRICULTURAL SCHOOL FOR BOYS.

The witness informed the Committee that an Agricultural School had just been opened in Sussex in connection with the Boy Scout movement in which an experiment was being made somewhat on the lines of the American Junior Republics. Each group of six boys would have its own little farm, ready stocked, together with 30*l.* in dummy money. They would have entire management of their own farm and could get ruined over it if they went wrong; but there was an expert adviser to whom they could turn, if they wished, when they found themselves getting into difficulties.

The fees of this school were 20*l.* a year, and, so far, the number of applicants had been four times as great as the number required. The number accepted at first was only 36;

\* Boy Scout Regulations.

but this would be increased to 100 by the end of the year. The idea was to begin with only a few, and to train them to act as head boys.

In addition to the farms, the school included a range of shops, viz., carpenter, blacksmith, bakery, laundry and leather worker. All boys would have to go through these shops before passing out, the encouragement to do so being the fact that work required at the school such as that connected with the bread supply, washing, repairs to harness, furniture, &c., would be put out to contract among the groups of boys.

### GIRL GUIDES.

The witness stated that the scheme for the Girl Guides was similar in general principles to the Boy Scout movement, but differed from it in details and in organization. The list of Proficiency Badges for girls contained several subjects which were not applicable to the boys, *e.g.*, Hospital-Nurse, Child-Nurse, Matron, Laundress, and, on the other hand, many of the boys' subjects were not in the girls' list.

A very useful part of the work for girls was the fitting up of the club-room as a hospital ward in such a way as to render it available in case of an accident happening in the neighbourhood. Valuable training was also provided by requiring the girls to keep all the accounts of the club themselves, and by encouraging them to make the hospital clothing, bandages, &c.

### ADDENDUM TO SIR ROBERT BADEN-POWELL'S EVIDENCE.

#### (a) *Proficiency Badges for Boy Scouts.*

Ambulance.	Marksman.
Airman.	Master-at-Arms.
Bee-farmer.	Missioner.
Blacksmith.	Musician.
Bugler.	Naturalist.
Carpenter.	Pathfinder.
Clerk.	Photographer.
Coastguard.	Pioneer.
Cook.	Piper.
Cyclist.	Plumber.
Dairyman.	Poultry-farmer.
Electrician.	Printer.
Engineer.	Prospector.
Farmer.	Seaman.
Farrier (First Aid to Animals).	Signaller.
Fireman.	Stalker.
Gardener.	Starman.
Handyman.	Surveyor.
Horseman.	Swimmer and Life-saver.
Interpreter.	Woodman.
Leatherworker.	

(b) *Proficiency Badges for Girl Guides.*

Ambulance.	Interpreter.
Artist.	Laundress.
Boatswain.	Matron.
Child-Nurse.	Musician.
Clerk.	Naturalist.
Cook.	Needlewoman.
Cyclist.	Pathfinder.
Dairymaid.	Pioneer.
Florist.	Signaller.
Horsewoman.	Swimmer.
Hospital-Nurse.	Telegraphist.

Mrs. BARTON, of Sheffield.

(*Evidence given November 15th, 1911.*)

## THE ATTITUDE OF WORKING PARENTS.

The witness said that her views on the subject of practical work in schools were probably not those of the majority of working-class parents. She was afraid that some would look at this question, as they did at the half-time question, from a rather narrow point of view rather than in the light of the best interests of their children. They were inclined to pay too much attention to the bearings of such matters on the immediate earnings and too little to the ultimate welfare of their children, and to the broader question of citizenship. They tended to regard the schools as places which should train a child to earn its living. At the same time there were no doubt many working-class parents who took a more enlightened attitude, and saw that an education based on considerations of immediate utility must inevitably defeat its own ends.

## THE GENERAL QUESTION OF HANDWORK IN SCHOOLS.

The witness felt that it was not wise to develop in a special way any particular kind of training for children up to 17 years of age. It was much better to give a general, many-sided education, and not to specialise on anything technical. If the schools confined themselves to the development of general intelligence and to making the mind active and supple, the pupils would be better able to deal with technical instruction afterwards. Further, the aim of education should be to train both boys and girls for citizenship and not to try and fit them to earn a livelihood. There was at present a tendency in the latter direction. The witness did not object to what had so far been done in Secondary Schools in the direction of Handwork for boys or Domestic work for girls; but she was afraid that there was a movement in the direction

of increasing this type of work, and she believed that such an extension of it would be wrong as involving specialisation in one branch of education. She had no desire to do away with such work altogether, because she felt that a certain amount of it was a necessary part of a general education. It should be placed on an equality with the other branches of a general education, and should not receive an excessive amount of attention at the expense of other subjects, either during the main part of school life or during the last year or two of the day school course.

In reply to a question, the witness agreed that in the Secondary School, which kept its pupils till a later age than the Elementary Schools, those in the higher classes would be more fitted to receive Manual or Domestic instruction; but she was firmly of opinion that it would be wrong to concentrate on this class of work in any kind of school until after, at least, 16 years of age.

#### DOMESTIC INSTRUCTION.

The witness said that the prominence which had of late years been given to the question of Domestic instruction had caused a fairly general fear amongst the working classes that the schools were being used as a training ground for domestic servants, and there was much criticism of schools which concentrated on Domestic instruction.

In the case of the Elementary Schools, many of the girls came from homes which did not give them the opportunities they should have of acquiring an adequate training for domestic life, and it was right that in such cases the school should do something to supply this deficiency. The question of Domestic instruction in the Elementary School was, therefore, rather different from what it was in the Secondary School. In the latter the pupils more often came from homes better adapted for training them in domestic habits, and they were expected as they grew older to take their part in the work of the home. Their mothers knew what was required to fit the girls for their after-life, and took pains to see that they got the practice they needed in the duties of a home. This was also true of the homes of the better-class workpeople whose children attended the Elementary Schools.

As regards the value of the Domestic instruction now given in Elementary Schools, the witness said that her experience of girls who had been through it was that they did not seem to learn much that they were able to put into practice in their own homes. This, however, was no doubt largely due to the fact that so many girls on leaving school had to go into factories and workshops, and during the time they were there they lost most of the knowledge they had gained at school. Of course,



this was not so much the case with girls who, although out at work during the day, helped at home in the evenings; but it was not all girls who did this. What these girls needed seemed to be a good general education at school, and, later on, Domestic instruction which would prepare them to manage homes of their own. While at school their time could be spent to much greater advantage on other subjects than advanced Domestic instruction, and in such a way that they would be much more likely to continue their education of their own free will after leaving school. For instance, the time given to English and to the encouragement of a love of good literature might well be increased. Reading was a thing which most girls did continue after leaving school, and it would be very desirable to give them some help in selecting the right kind of books out of a mass of reading material containing much which was not good.

As regards the more advanced Domestic work, the witness agreed that a knowledge of home duties was an essential requirement for good citizenship; but she thought that the early years of life were the wrong time to try to impart this knowledge. It was no doubt true that under existing conditions many young girls did have to perform quite responsible work in their homes; but she was of opinion that this was one of the features of our present social state that called for remedy. It was quite wrong, for example, to try and teach a little girl of 10 or 11 to wash and care for a baby. It was giving her knowledge she was not ready to receive, and which she was certain to forget long before she had need of it. It was true that under present conditions young girls were often called upon to perform such duties; but it was not a natural kind of work for girls at this stage of life, and to instruct them at school in such duties would be merely to perpetuate a practice which was quite wrong, and would not exist in an ideal state.

While it was undoubtedly a valuable training for a child to be allowed to help the mother, it was wrong to permit a state of things which caused many children to become old before their time. And it was a fact that amongst the poorer classes of the community boys and girls of 16 were like grown men and women, whereas in the Secondary Schools they were still at that age just boys and girls. The witness did not agree that this system had the effect of making the children more thoughtful and more useful as citizens; it might make them sharper in some ways, but their view of life was narrowed. In the same way a boy who left the Elementary School at 14, and went to technical classes in the evening, might become more clever at the particular subject he was studying than a Secondary School boy, but he would never make as intelligent and broad-minded a man.

CONTINUATION SCHOOLS FOR MANUAL AND DOMESTIC  
INSTRUCTION.

The omission of advanced Manual and Domestic instruction from our education was certainly a defect; but it was one that could only be remedied by extending the years of education. We ought to have some system of compulsory attendance at Continuation Schools; and that would be the time to develop the practical training of both boys and girls. This meant, of course, that the whole labour world would have to be revolutionised, for it would not be feasible to require the evening schooling of boys and girls who had been working all day; their attendance at Continuation Schools, therefore, if enforced, would have to be during the day time. In parts of Germany, however, a scheme of the kind had been introduced, and it could be done in England.

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Mr. JOHN COOKE, late Honorary Secretary of the Board of Examinations for Educational Handwork and Member of the Executive of the Educational Handwork Association (now Inspector of Handicraft under the Board of Education).

*(Evidence given October 21st, 1909.)*

In reply to questions as to his own experience of, and interest in Handwork, witness stated that he began his teaching career as pupil-teacher. On expiration of apprenticeship spent two years—1885 and 1886—as a student in training at Westminster. On leaving College he entered the service of the London School Board, and had remained in the service of the London Authority ever since. Attended classes in Wood-work, on Saturdays, at the City and Guilds of London Institute. That was before the Institute commenced to hold examinations. Attended classes in Metal-work at Battersea Polytechnic. In 1889 he went with a party of English Handwork teachers to Sweden, and in 1890 went there a second time; visited the Handwork centre at Leipsic in 1891. At Nääs in Sweden he studied Wood-work, and at Leipsic Metal-work and Cardboard-modelling. Had been connected with the Sloyd Association, the Educational Handwork Association, and the Board of Examinations for Educational Handwork. Acted as Examiner in Handwork for the Intermediate Schools in Wales under the Central Welsh Board, during the years 1905, 1906, 1907, and 1908.

PUBLIC ORGANISATIONS CONCERNED IN THE PROMOTION OF  
HANDWORK.

The witness said that the City and Guilds Institute and the Board of Examinations for Educational Handwork were the only two public bodies in England whose certificate in Handwork were recognised as qualifications by the Board of Education. The City and Guilds Institute dealt only with examinations in Wood-work and Metal-work. The Board of Examinations covered the whole field of educational Handwork. The Educational Handwork Association, one of the contributory bodies to the Board of Examinations, provided for the training of teachers in this branch of education. The National Association of Manual Training Teachers dealt with teaching, but was not concerned with examinations.

The Educational Handwork Association originated with a small association of English people, mostly teachers in private schools, who had been to Sweden and studied the Sloyd system at Nääs. Out of this small association grew the Sloyd Association of Great Britain and Ireland, formed to advance the knowledge and teaching of educational Handwork (termed "Sloyd"). After a time another association was formed in the northern counties of England out of those members of the Sloyd Association who felt that in the north of England they could work better if left to themselves. Later this new association became the Educational Handwork Union, the name "Sloyd" being dropped. These two associations were really working together, although separate organisations; and both of them at the same time instituted examinations.

Thus there were two associations on exactly similar lines, the Educational Handwork Union and the Sloyd Association of Great Britain and Ireland. These two bodies combined their examining functions in the Board of Examinations in 1898, and their working together on that Board paved the way for the complete amalgamation of the two bodies which took place five or six years ago, on the formation of the Education Handwork Association.

The Association was organised in branches which covered pretty well every part of the country, with an executive body for general purposes formed of representatives of all the branches, the representation being proportionate to the number of members in each branch. This executive met four or five times a year.

The aims of the Association were to spread the knowledge of the educational principles underlying Handwork, and to seek to introduce such work into schools of all kinds and in connection with the whole education both of boys and girls. With regard to the controversy that arose a few years ago on the question of Sloyd work, that was due to a mistaken idea that only the knife was used in that work. As a matter of fact, it

was on the principles of educational Handwork that Sloyd had its foundation, and the knife was used simply because that was the tool to which the children were most accustomed.

### EXAMINATION IN HANDWORK.

When first instituted the Board of Examinations concerned itself only with Cardboard-modelling, Wood-work, and Metal-work, and endeavoured to show how the work in these subjects could be arranged on educational lines in distinction to the more technical lines of the only examinations then used, *i.e.*, those of the City and Guilds Institute. From these three branches the subjects had grown so as to extend from the kindergarten to the other end of the school. The Board now held examinations in all Handwork subjects. It was the Board's desire to put aside the idea that the object of Handwork was to prepare technically for trade, and to secure its introduction as a purely educational process in any good school, on the principle that for true education the hand must be used as well as the brain.

The examination, in every branch of the work, consisted of two parts—(a) Preliminary Work, and (b) Examination Work. The Preliminary Work consisted in working through an approved course of study, practical and theoretical, under a teacher recognised by the Board. The Examination Work consisted of two sections, (a) Theory Paper, and (b) Practical Test, together with a separate Drawing Paper in certain subjects. The Practical Examination was conducted, in every case, by a skilled examiner who inspected the whole of the Preliminary Work—objects and drawings—and assessed its value; and, in addition, saw the candidate at work, and was thus able to value his methods of manipulating tools and materials. An interesting part of the course was the provision—in certain branches of work—requiring the candidate to make a model of his own design to take the place of any model in the course, and to explain his reasons for placing it there. This gave the examiner the opportunity of talking to the candidate, and finding out his general attitude towards the work. Thus the whole course of the student was taken into consideration, and in addition he was required to do something under the eye of the examiner. The examiner had to satisfy himself by his inspection of the work, and by discussion with the teacher, that the student had been through a thorough course.

Two certificates were awarded by the Board of Examinations for Educational Handwork—the Teacher's Certificate and the Teacher's Higher Certificate. The Teacher's Certificate qualified a teacher to teach in Elementary Schools and the lower forms of Secondary Schools. The Higher Certificate qualified in addition for all forms of Secondary Schools and also for teachers' training classes. Both certificates in Wood-

work and in Metal-work were recognised by the Board of Education. They certified to the ability of the holders to teach, as well as to their theoretical knowledge and practical skill. A candidate could not enter for either examination until he had given evidence of ability to teach. Holders of the Teachers' Certificates of the Board of Education, the Scotch and Irish Departments, and certain other bodies were accepted as having thereby fulfilled this condition. Others had to furnish evidence of two years' continuous teaching, together with evidence from responsible persons (*e.g.*, head teachers, council or other inspectors, &c.), as to ability.

### HANDWORK IN SCHOOLS.

The witness was of opinion that in every school a substantial time should be devoted to Handwork, from the bottom of the school to the top. In schools where it was impossible to take Wood-work there were many other subjects, such as Paper-, Cardboard- or Clay-modelling, in which a good deal of valuable work could be done. The time devoted to Handwork, including Drawing, should be not less than two hours per week.

The principles of Handwork were the same in regard to girls as boys, but the material used would be different. Girls would have such subjects as Needlework and Cookery; and Needlework, especially Art Needlework, would involve a good deal of Drawing. Cardboard was also a suitable material.

Examinations sometimes constituted a difficulty in regard to Handwork in both Secondary and Elementary Schools. It was desirable that in leaving and other certificates Handwork should be counted as part of the school curriculum.

#### (a) *In Elementary Schools.*

It was desirable that Handwork, which already played an important part in the infants' school, should be carried on from there right through the school. There should be no real break between the infants' and the upper school. At present the children coming into the upper school found a great change from the conditions to which they had become accustomed, and teachers realised the undesirability of this break. So far no general move towards a change had been made; but attempts were now being made in a few schools in London and other places to provide some Handwork for the younger children in the upper school, and proposals were under consideration by the London County Council. Some years ago something in this direction was done in nearly all the lower classes in London schools, but the form it took was not well adapted to the children, and the work was very rightly dropped. Since that time nothing had been done except in a few schools which had Brush Drawing and other forms of Drawing, Paper- and

Cardboard-modelling. In some parts of the country very good work was being done in the classes for children between about 8 and 12, as, for example, at Leicester, Bradford, and Leeds, and in Bucks.

In answer to a question, the witness said he was doubtful about the desirability of giving grants for Handwork in the lower standards of the Elementary Schools, as there was the danger if that were done that the work might be introduced solely for the purposes of securing the grants.

In order that the lower standards of the Elementary School should carry on the work of the infants' school, a Handwork course in the upper school might begin with Paper-folding and Cardboard-modelling, allied with line drawing and showing the connection between the two. Line drawing would develop into mechanical drawing with ruler and mathematical instruments, which again would ally itself with the wood or metal work of the upper classes. The other side of Drawing, the artistic, could be allied with Clay and Brush Drawing. From the beginning the work involved the use of tools. For Paper-work and Cardboard-modelling, scissors, knife, &c. were used.

All the work done in the lower standards could be done in the ordinary classrooms, and should be taught in relation to the other subjects of the curriculum. In these classes the work should consist more of method than matter, as illustrating and helping the understanding of the other school subjects. For example, the whole teaching of Arithmetic in Standards I. and II. could be made practical by the use of paper material and a ruler.

In Standards IV. and V. there was room, as an introduction to the work of the centre, for some simple Wood-work at the desk in connection with some other material such as cardboard.

As regards the equipment for Handwork, the ideal thing was to have a Handwork room in the school itself. But it was much cheaper to have a special centre than to fit up rooms in each school. There were many schools, of course, which could never hope to have either a special room or the use of a centre. For these a lighter form of work was desirable. A certain amount of light Wood-work could be done in the ordinary classroom, and, in fact, was actually being done in certain schools. The witness had seen it at Manchester, where it had been introduced in some schools by the local authority as an experiment. The apparatus used was the simplest possible, the chisels, in some cases, being made out of French nails. This simple class of work would be especially useful in country schools, into which there was now great difficulty in introducing Handwork.

The work done in the centres was as a whole very good; but the great fault lay in the fact that it was apt to become something quite apart from the ordinary school work, whereas it ought to be in intimate relation with the curriculum. The whole school

study should be a matter of progression from the lowest class to the highest, and the Handwork should progress in connection with that course. This was certain not to be secured where the Handwork course was drawn up by a teacher not connected with the school. Where therefore the centre system was in use the Head Teachers of the schools should be allowed some influence in regard to the course to be followed by their own pupils.

(b) *In Secondary Schools.*

The witness explained that he was more intimately acquainted with the Intermediate Schools in Wales than with Secondary Schools in England.

He was of opinion that the extent to which Handwork should be introduced into Secondary Schools depended largely on the condition of the children when they entered the school. If they had been attending a primary school where the subject was well taught they would be in a better position than if they had to begin at the beginning in the Secondary School. Very little was done in the primary schools in many districts of Wales with which the witness was acquainted, simply because no provision was made for it. This difficulty might be met in some cases by using the workshop of the Secondary School as a centre for the neighbouring primary schools. As so many of the pupils of the Secondary Schools were drawn from the primary schools this would help matters a good deal. In a village Secondary School, for instance, where there was a fully equipped work room, Handwork might be introduced into the surrounding primary schools by allowing them the use of the room at the Secondary School.

There would probably be no difference between the Woodwork taught in Secondary Schools and that taught in primary schools, except that possibly in the former the work would be carried further; but this would not be so unless the pupils had had previous experience of the subject. In any case Handwork should be carried right through the secondary school until the time of leaving. Probably it would be desirable to have a short course of Metal-work to follow the Wood-work. Metal-work introduced a different character of material, different tools, and new principles, such as the application of heat, and therefore different educational lessons could be learnt from it.

*Teachers of Handwork.*

In addition to general work the Association had for many years organised a summer holiday course at Scarborough for teachers in all kinds of schools. The work ranged from kindergarten Handwork through a variety of occupations such as Brush-drawing, Clay- and Cardboard-modelling, Woodwork, Wood-carving, Repoussé work, Needlework, and Art Needlework. It was desired to show that all these practical subjects might

be so arranged as to illustrate and extend the ordinary school studies. Other holiday courses of the same kind had now grown up. Last summer, *i.e.* 1908, there were five courses, attended by about 600 teachers altogether, *viz.* :—200 at Scarborough, 200 at Barry, 60 at Brighton, 60 at Ambleside, 60 at Abergele.

Most of the students at the course were teachers in primary schools, but there was a large and growing number of Secondary School teachers. Many of them attended year after year to take up different branches of the work. The fact that they were willing to sacrifice their summer holiday year after year was proof of their belief in the work and their desire to introduce it into their schools.

A good many teachers of Handwork were men who began life not as teachers, but as artisans. But as a rule such men were now appointed in the first place as assistant instructors, and were required to have some qualifications for teaching their subjects. A system had also grown up of training teachers in this work by means of manual training pupil teacherships. The old system of employing artisans as teachers (some of whom no doubt were very successful) was gradually dying out. A good many teachers trained in training colleges had given themselves up to this class of work. Nevertheless there was still a good deal of difficulty in some Secondary Schools to get a teacher who could take his place in the ordinary staff, and teach Handwork in addition to other school subjects.

The lack of qualified teachers was seriously felt in country districts. The difficulty there could to some extent be solved by means of paripatetic teachers; but one looked forward to the time when there would be a teacher on the staff of each school conversant with the work. A great many country teachers were attending summer courses in order to qualify in Cardboard-modelling, Brush-drawing, and other subjects of this sort. But no doubt the time was still very distant when every village school would possess a teacher qualified to teach Handwork.

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MISS MARGARET McMILLAN.

*(Evidence given March 21st, 1912.)*

Manual training is in itself a kind of misnomer, since in the earlier years of life it is impossible to divorce any kind of mental life and activity from the free use of the hands; and in the later teens even, progress in Science, and, indirectly, even in humanistic studies, depends on varied work and experiment and the impressions gained through these—a fact of which the Board of Education has ample evidence in its archives, and reports and evidence from the methods of very successful Secondary School teachers. The latter cast aside text-books



simply because it interfered with the natural mode of gaining knowledge.

The situation to-day is a very serious one, in view of the fact that so much school work, even in Elementary Schools, is sedentary and confined too largely to books. The witness, however, was far from underestimating the importance of the three R's, and was of opinion that these should be taught by vigorous means and very thoroughly, so that at 14 a child should have some mastery of his mother-tongue and capacity in Arithmetic.

It would seem, however, that these ends are not attained best by neglect of all the demands and claims of the organism as a whole, and particularly of the hands. Large, massive movements and free exercise of the large muscles appear to constitute a preparation for finer drill and experiment, and to be necessary not only for health, but for safe mental development.

Witness confined herself mainly, however, to speaking of physical defects resulting from premature fine work and premature sedentary tasks. Fine finger-work in the infant school and fine eye-work was probably responsible for much nervous breakdown, and certainly for many cases of eye-strain. It was noticeable that though the army of children needing glasses was very large for both sexes, yet the girls were in a larger proportion than boys (this at least was noticeable at Deptford). The witness believed that the teaching of Sewing to little girls was responsible in some degree.

*Sewing*, even with large stitches, if done on white ground with white thread, is very injurious to children, and witness believed it would be better if *no* sewing were attempted in schools before the age of seven: also that writing should be learned, not at desks, but practised with shoulder movements, standing, and on a large surface.

But no conventional school-room offered, and no ordinary playground provided, the opportunity for the great range of activity and experiment needed by children of school age. That is why camps and open-air schools were necessary adjuncts of our school systems. It was easy to see how relieved the city boy was when allowed to dig, plant, raise suitable weights, and do rough carpentry in the open. He was like a creature from whom handcuffs and fetters had been suddenly unloosed. In the open, too, he was ready to attack school subjects in a new spirit, and there was no reason why composition, spelling, reckoning, drawing should not be thoroughly taught in camp, or, indeed, why almost any school subject should not be tackled out of doors during six or seven months of the year, or even 10 months!

The witness gave certain details of the work in the Deptford School Camp, opened as a form of treatment by the School Clinic. Three relays of boys attended; first, the excluded boys (all delicate or anæmic) who attended all day and slept out, also (in

another part of the garden) the excluded skin cases, and, finally, a large number of school children came to garden in the evening from 5 to 7. The camp could provide for 200 children in all, 50 of whom may be outdoor sleepers.\*

The camp provided school education, for it was presided over by a fully-qualified and certificated master. From 9 to 11.30 he gave instruction to two classes (one class was gardening while the other was having lessons), and in the afternoon another hour and a half—3 to 4.30—was given to formal instruction. There was an hour for sleep, 1.30 to 2.30. The boys took charge of 12 large vegetable plots and a large flower garden. They slept on camp beds, and bathed daily. Nearly all the camp furniture was made by them. On Saturdays they made excursions with the teacher.

The equipment of the camp cost from 30*l.* to 35*l.*† (excluding the payment for some heavy labour undertaken by men who got the ground cleared). The expense of upkeep during the first year would work out as nearly as could be estimated at 200*l.* This would include provision of breakfast (oatmeal porridge, milk, and nut biscuits). The salary of the Master was 110*l.* As a large piece of new ground had been taken at a rental of 5*s.* per week, it was hoped that the number of campers would be largely increased, and the number of evening workers correspondingly decreased. Two-thirds of all the children in the neighbourhood should, according to the dictum of the clinic doctors, be in such camps. The long disused burying ground of St. Nicholas has been given to the witness at a rental of 20*l.* per annum.

The benefit of such camps was not, in witness's opinion, confined to the fresh air, hygienic surroundings, or even the new training in good habits; there was also the fact that the young people could now take hold, literally, of every school subject with new vigour and interest. Thus nothing was specialised out of all contact with the gross exercises of the open camp life. The children wrote of what they saw and handled. Even the blackboard exercises, the English words written on home-made blackboards under waving trees and with considerable muscular exertion, charge home, as it were, with some fullness of content and meaning. The children not only "feel their life in every limb," they appeared to need every limb and muscle in order to learn freely.

The witness believed that life and work of this order is needed for all children; but did not profess to know whether

\* The camp no longer includes day cases, but only *day and night* pupils. The boys are sleeping out regularly. A second master is engaged. The head has a salary of 190*l.* (December 9th, 1912.)

† The equipment now has cost about 150*l.* There is an iron building open entirely on one side, and open partly on two sides. The boys are rapidly getting well. They have a warm bath followed by a cold shower-bath every night, and eat supper by gaslight in the open shed. No one complains of cold. (December 9th, 1912.)

this particular way of winning it was advisable for boys in secondary schools and children of all classes.

The witness suggested that a good deal might be done by utilising waste spaces. The Parks Committee might assist the experiment by supplying rough timber. The Americans had proved that the parks could be used for educational purposes, and it was open for England to make arrangements with the Parks Committees as had proved so helpful in America. Chicago has 18 very educational centres for children in her parks in 1910.

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MISS MAUD R. TAYLOR.

(*Evidence given September 30th, 1909.*)

The witness explained that she had taken the ordinary diplomas for Domestic Teaching, and had done some teaching in Elementary Schools and county council classes, and as Head Teacher of the Dublin Training School. She had afterwards had the duty of examining teachers in training schools in connection with the National Union for the Education of Women in Domestic Science, which did the bulk of the examining until the Board of Education insisted upon the schools conducting their own examinations. The Union still did a certain amount of work, as it supplied examiners and audited marks, &c. for seven of the schools.

#### DOMESTIC INSTRUCTION IN SCHOOLS.

In both Elementary and Secondary Schools it would be possible to make Domestic work a part of the general school course from the kindergarten onwards. At present the Domestic work done in schools was of comparatively little value, because it was taken almost as a "fancy extra" with no relation to the general education of the schools.

##### (a) *In Elementary Schools.*

The witness failed to see why, if a certain amount of Handcraft was good in the kindergarten, that branch of education should apparently cease as soon as a child left the infants' school, to be taken up again at 11, as though the principle had been worth nothing at all. It ought to be possible to carry this work right on, and so far as girls' education was concerned no subject would carry it on so well as Housecraft. The kindergarten should be advanced and the Housecraft brought back to a point at which they met.

Of course, as Domestic work was taught at present in Elementary Schools—*i.e.*, as three separate subjects, Cookery, Laundry, Housewifery—it could not possibly be linked on to

kindergarten work. The Board of Education encouraged schools to take Cookery first, then Laundry, and then Housewifery; it would be much better if these subjects were taken in the reverse order.

The witness sketched the kind of course she considered desirable. Beginning at the lower part of the school, there were certain branches of fancy Paper-folding and tearing that could easily be made to lead on to Needlework, excluding all fine stitching at first of course. A good deal of what might be called Housecraft might be put into the Arithmetic, in the way of measuring, weighing, &c.; and Cardboard-modelling could also be worked up well to link on to the Housecraft. Witness was not prepared to make any definite suggestions for a course at this stage of the school; but she was confident that a meeting of Elementary School, Kindergarten, and Domestic teachers could easily settle upon something to fill up the present gap between the infant school and the commencement of definite Domestic instruction, and so avoid the existing arrangement by which a certain portion of mental machinery was set in motion and then stopped for several years.

At the age of 10 the first definite teaching of Housecraft might come in, beginning with more experimental work than at present, and in the branch known as cleaning; by taking this branch first it was possible to start at 10 instead of 11. From this point a graduated course of Housecraft could be carried right through the school, possibly through simple Laundry, and simple Cookery, to more advanced things. It would be necessary to take into consideration the probable ability of the child, and the possibility of accident through dealing with dangerous materials in Cookery. It was an interesting fact that the average Elementary School child could safely be given work involving the use of a fire about four years earlier than the average Secondary School child.

The witness disapproved of centres for Domestic instruction. It was their use that had largely been the cause of the subject being regarded as an "extra." Owing, however, to the difficulty of making special provision for the adequate teaching of Domestic Science in the case of small schools, no doubt the best course, in some cases, would be to make use of centres.

If it might be presumed that a laboratory would be available for use in connection with Housecraft, Chemistry and Physics would form a very definite part of the course.

At present there was a deplorable lack of "scientific method" in the Housecraft teaching. The aim of the teaching, both in the training of teachers and in the schools, was the acquirement of manipulative skill.

It was essential that the specialised teacher should be a part of the school staff.

The teacher of Housecraft in the Elementary School should have enough Science training to enable her to understand

“ scientific method.” and to admit of the teaching of practical Housecraft being accompanied by simple experiments. But it was not necessary she should be so equipped in Science as to be able, say, to prepare students for a science examination.

If Housecraft was brought into the schools as a part of the ordinary school work, the ordinary teachers would take it up and carry it on from the kindergarten upwards. The teacher in the small village school was frequently more fitted for this work by her own home training than the best specialist ever turned out. It was really a mere commonsense course.

(b) *In Secondary Schools.*

Girls entering Secondary Schools at about 12 years of age should have already learnt a certain amount of Housecraft at the preparatory or Elementary School.

The Secondary School would presumably teach Chemistry and Physics and Hygiene, and every girl should do a certain amount of laboratory work, and a proportion of the time given to this work should be devoted to experimental kitchen work. The Domestic work should be given a scientific basis, and on the other hand when experiments were needed in the Science work they should be of a Domestic character.

The Board's rule as to giving so many hours to practical work or so many to Science was quite wrong; it should not be possible to say where one side began and the other ended.

A slight alteration was wanted in the present laboratory by the addition of a little more equipment to bridge the line between the test tube and the saucepan. The connection between the two should be very intimate.

At the same time care should be taken not to emphasise the science side too much. It should always be remembered that the important thing in cooking was the finished article.

It would be much better to carry the Domestic work right through the school in connection with Science than to teach Science in the old style and then keep the girls at school an extra year for Domestic work. The Science work right through should have a Domestic basis. This would not involve the loss of any of the Science now taken in girls' Secondary Schools, though possibly it might mean running a four years' course of Science over five years. All that was done at present would remain, with the addition of a little more, and girls could still be prepared for the matriculation and at the same time gain this other knowledge. Courses of this kind were already in existence, and girls had not been found to complain that they imposed unnecessary work in preparing for examinations.

At the same time it was very desirable that any leaving examination should be adapted to a course of this type. A small committee had been working at that question, and had asked the Joint Matriculation Board of the Northern Universities to set an alternative paper in Science in their matriculation.

A syllabus had been drawn up and submitted to the University. It was desirable that a paper should be set for those girls who had taken Chemistry and Physics (papers), not instead of these subjects, but as a household application of them.

The amount of Domestic work in Secondary Schools was small at present, and a good deal of the old teaching was quite mechanical. But it was satisfactory to note that most of the teachers were aware that their teaching was in need of modification. The teachers had been trained on the lines laid down by the Board, and they were hampered by the Board's regulations. Much of the teaching was on the idea that the teacher made a rice pudding, and then the girls each made a rice pudding.

Some teachers, however, did not understand what the instruction ought to be, and others were prevented by the conditions under which they worked from making the teaching really effective. They were not allowed to spoil, and without spoiling it was not possible to teach Cookery, and they had to do everything in as economical a way as possible.

It was right that a child should see the practical end of her work, and it might be an excellent plan for the child who cooked a dinner to eat it; but it was most undesirable to set a cookery class to feed a whole school as was sometimes done. This resulted in such absolutely wrong methods as putting a child to peel potatoes all the morning. This sort of thing should not be allowed unless it could be shown that it had not hindered the education of the class, and it was difficult to conceive of such circumstances. The work under conditions of this sort was bound to become mechanical.

The teacher of Domestic Science in a Secondary School should be a Science teacher who had had a further training in Housecraft. The training of teachers on these lines had so far been carried on for so short a time that it was too soon to look for results. It was necessary to avoid a too exclusive Science training for teachers of Domestic work, for a teacher was seriously handicapped by not possessing manipulative skill; but the test of a teacher's ability should not depend entirely on such skill.

#### THE TRAINING OF TEACHERS FOR DOMESTIC SCIENCE.

There were about fifteen Domestic Economy Training Schools in the whole country at present. There was reason to think that a much better type of girl was tending to enter them; but it was of great importance to insist upon the institution of suitable entrance examinations. Matriculation should be a minimum qualification of general education. Each school at present set its own entrance examination, and these examinations were hindering the work very much indeed. The whole training needed adapting to more scientific methods. The

schools had improved greatly in the last few years ; but the Board of Education theoretically allowed each school to develop on its own lines, with the consequence that many schools were turning out teachers with Science not worth its name. Much benefit would result from the establishment of good entrance examinations.

The Association of Teachers of Domestic Science has about 1,100 members, but there are probably several hundred more teachers employed. These teachers are all qualified to teach for the Government grants, and are mostly employed in Elementary Schools and school centres.

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