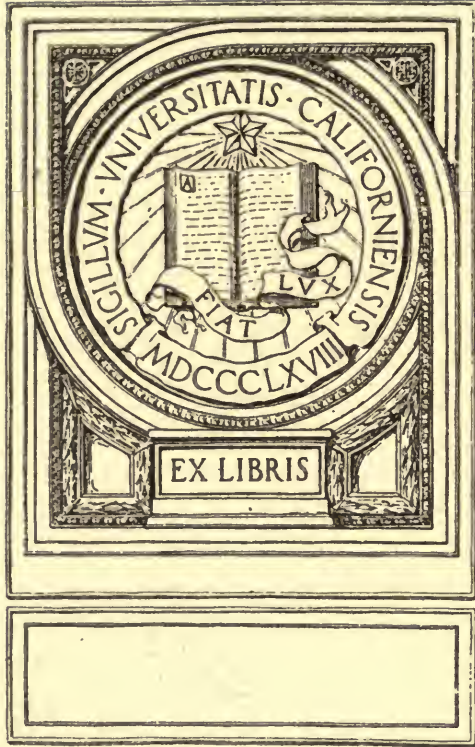


THE
THINKING HAND
OR
PRACTICAL EDUCATION IN THE
ELEMENTARY SCHOOL

J. G. LEGGE





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THE THINKING HAND



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THE THINKING HAND

OR

PRACTICAL EDUCATION IN THE
ELEMENTARY SCHOOL

BY

J. G. LEGGE

DIRECTOR OF EDUCATION IN THE CITY OF LIVERPOOL

UNIVERSITY OF
CAMBRIDGE

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A. H. C.

To

G. STANLEY HALL,

PH.D., LL.D.,

PRESIDENT OF CLARK UNIVERSITY, U.S.A.

AUTHOR OF "ADOLESCENCE" AND OF "YOUTH,"

THIS VOLUME IS

VERY RESPECTFULLY DEDICATED.

333906

“Thätiger Geist und sinniger Hand
Ziehen den Segen ins Vaterland.”

“Non ha l'ottimo artista alcun concetto
Ch' un marmo solo in sè non circonscriva
Col suo soverchio; e solo a quello arriva
La man che ubbidisce all' intelletto.”

MICHAEL ANGELO, *Sonnet XV.*

PREFACE.

LORD HALDANE has recently been delivering his views on our educational system or want of system. He appears to regard the situation as chaotic, and to be as much troubled by chaos in education as by unrest in society. Obvious remedies are parliamentary action and administrative action; a new bill, more codes and regulations. But Lord Haldane is more than a mandarin; he is also a philosopher. And the philosopher brooding over chaos has conceived an additional remedy for all ills—cheap access to universities. Harmony, of which universities in general furnish so many rich examples, is to be restored to society and education by a touch of the academic wand.

One object of this book is to show that the workers on lower planes of education than the universities are not conscious of living in a state of chaos, but are progressing steadily without the intervention of the Homeric heroes of Parliament and the Board of Education. The *Zeitgeist* is abroad, and the rank and file, in obedience to it, are, as they ought to do, working out their own salvation. One of the lines, perhaps the main line, on which the elementary school system is advancing is the movement towards the introduction of a manual side into the activities of our elementary schools. This movement has made astonishing progress in recent years, not merely, or chiefly, in England, but all over the world, in the British Colonies, notably Canada, in the United States, in Scandinavia, in Germany, and no doubt elsewhere. In Canada indeed certain illustrated official publications lead one to the view that, despite the fine efforts of several of our English counties, a distinctively rural education, so far as practical gardening and estate carpentry are concerned, is more general there than in the old country.

This book deals with the movement as it displays itself in city schools. Liverpool's reputation for modesty will save the writer from any accusation that he is glorifying the city which he serves. The fact is that dwellers in Liverpool are no better informed of what is going on inside their own schools

than are the inhabitants of any other city in the country. Liverpool is not unique ; as full a picture could no doubt be furnished by many another large town. The author naturally selected the city best known to him. The letterpress is here simply to explain and lead up to the illustrations, which are designed to give the general public, in a single evening and without the need of stirring from an easy chair, such a view of one side of the work going on in our public elementary schools, as could otherwise only be got by a personally conducted inquirer whirled about the city for a whole week in a taxi-cab. The photographs of many phases of the work are piled one on the top of another to show that the work is being done in the mass ; to convince the public that visits are not being paid only to carefully selected experimental stations. Considerations of space have unfortunately dictated the omission of all illustration of what is going on in our Infant Schools—better known in any case than schools for older scholars—and of one branch of handicraft, viz. drawing, in which during the past five or six years little short of a revolution has been accomplished. The material afforded by drawing is only too copious, and demands a volume to itself.

While the Appendices, as well as the illustrations, may afford some useful hints and suggestions to persons taking a professional interest in their subject, the design of the book precludes any attempt to compete with the numerous text-books, many of great value, which are being poured out for the guidance of teachers addressing themselves to the problems of hand-work in the workshop, domestic centre, and class-room.

There is nothing original in his efforts, but the author makes no apology for quoting largely both from others and from himself. He quotes from others where they have said in better words than he could command, and with more authority, what he desired to say, and from himself where poverty of expression has prevented him from finding a new formula of words in which to cloak his ideas.

He can only express the hope in conclusion that those who do the book the honour of at least glancing through the illustrations will not only be interested, but will also realise that the pathological aspect of childhood, of which we hear so much, is not the only one, and that in the realisation of a sane and sound future for the child, the teacher, even if a modest place be reserved for the parent, will have quite as much to do as the doctor.

J. G. LEGGE.

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Or

CHAPTER I.

CLEARING THE GROUND.

THE purpose of this book is, as stated in the preface, to give some idea of one of the most effective movements now to be found in the sphere of elementary education, viz. the development of the manual side of the curriculum, not in opposition to the intellectual side, but in association with it. An attempt will be made to write of the subject in plain English as distinguished from Pedagogese, to treat it as a simple matter, not shrouded in any oriental mystery, and to show that little more is necessary to an appreciation of it than common sense and good-will. In his *Talks to Teachers* Professor William James has well said :

“ Altogether it does seem as if there were a certain fatality of mystification laid upon the teachers of our day. The matter of their profession, compact enough in itself, has to be frothed up for them in journals and institutes, till its outlines often threaten to be lost in a kind of vast uncertainty.”

It is time, indeed, that a protest was made against not only the mystagogic tendency of educational literature, but also against the portentous solemnity and the pretentiousness, nay even the canting assumption of superior virtue, which characterise much of it, and not least official utterances in circulars, and the introductions to codes and regulations. There lurks a real danger in this attitude. Official literature on the subject of education is so dull that it bids fair to be the cause of dulness in all concerned with teaching, or with the administration of education. The complaint is rife that the general public will not interest itself in education. Why should it? Who was ever interested in a bore? Even one bore cannot tolerate another, and every plain man instinctively recoils from the diet of verbiage and platitude thrust upon him.

THE THINKING HAND

Let us then attack our subject in an earnest spirit, if you will, but cheerfully, and with the hope that we may get some enjoyment out of it. And as there is no greater fun than fighting, let us have a tilt in our first chapter at three giant windmills set up by pedants to discountenance us. Those of us who advocate the introduction of manual work into elementary schools have been charged with (1) infringing the principle that the elementary school should confine itself to providing the basis of a general education, (2) trenching on the field of technical education, and (3) introducing prematurely the vocational school, a term more suspect to-day than it will be ten years hence.

In meeting the first charge we may admit that the aim of the elementary school is to afford a general education, such an education as may indeed form the basis of specialisation afterwards, but in itself only proposes to turn out a child at fourteen or thereabouts as well equipped as may be to play some part on the great variety stage of life. This book contains no attempt to upset the sound principle thus enunciated, but it will raise the question whether the principle has been rightly understood, whether as a matter of fact there is a colourless abstraction which can be expressed in terms so as to serve, not as *a* type, but as *the* type. The common interpretation of a general education is an all-round preparation of the individual for life. But in face of the facts that individuals differ, and that life has a particular signification for every individual, we can scarcely fail to recognise that the education which fits one individual for his life cannot always be expected to fit another for his, and are driven to the conclusion that there is no one type of general education. And it then becomes an open question whether a scheme of education is not entitled to be styled a general education, even if it has a certain colour, or, to change the metaphor, is so designed as to give a certain bias.

That a general education may yet have a particular bias is now accepted in secondary education. The old idea that the only type of general education is the classical type, based on linguistic and what was supposed to be intellectual training, is gone. In our English public schools we have had for years our classical and modern sides. In Germany, the home of organisation, the differentiation of types is even clearer, and the old classical gymnasium has now a twin brother in the *Oberrealschule*. A third type, with a commercial bias, is asserting itself both in England and Germany, and it will not be long before these two nations of manufacturers, business men, and shopkeepers, develop this type to something like an equality with the other two. Why not some such differentiation of types in the elementary school?

The plea is indeed more urgent in the case of the elementary school. Our main interest is bound to be centred in the elementary schools, for under existing conditions they furnish the bulk of the population with all the formal education they will get in their lives, and in them lie the hope and the despair of the future. There is more to be borne in mind than the mere facts that the bulk of the population receives its education in the elementary schools of the country, and that the vast majority of elementary school pupils do not proceed to secondary or technical schools. The rapid growth of municipal and county secondary schools, and of technical institutes of several grades, renders it probable that in a very short time the majority of young people in England receiving a secondary or a technical education will be found to have received their early training in an elementary school. Even more important than these considerations is the part played of necessity by the elementary school in forming a child's habits. Mr. Temple, the headmaster of Repton, in an address on "The Education of Citizens," has referred to Aristotle's statement that there are three sources of virtue—nature, habituation, and education, of which the second, habituation, is the most important. But Mr. Temple complains that when children go to school they are already moulded and beginning to be stereotyped into the form that early influence has determined. That is not true so far as the elementary school is concerned; the children are not moulded or stereotyped when they enter it at four or five years of age. The elementary school shares with the home, far more than does any other school, the duty of forming the child's habits. Hence the predominant importance of the elementary school, hence the vital necessity for getting into it the right atmosphere, not the rarefied atmosphere of an abstract curriculum, but a natural atmosphere charged with interests appropriate to the children who frequent it, and shot through with flashes of light and colour that stimulate their eager curiosity.

Against the second charge, that we are trenching on the field of technical education, we may advance the following considerations. It is becoming a commonplace among investigators of the industrial and social conditions of the country that the main evil at the root of unemployment is that too large a proportion of our population is positively unemployable. There is no doubt a good deal of truth in the contention, but it can be pushed too far, and the statement is not to be accepted as a mere commonplace. There are certainly other and serious causes of unemployment than the undoubted fact that many of our labouring classes are unsuited for skilled employment of any sort, and

some for any kind of sustained exertion whatever. We may assume that it is desirable to increase the number of skilled workmen and labourers. We may go further and assume that it is the duty of the State to provide facilities to become a skilled workman for every child capable of becoming a skilled workman. If those facilities are not taken advantage of in every case, the fault will rest with the individual or the individual's family, and not with the State.

But if we have heard of late years much discussion on the necessity of technical training, it must be admitted that *the avowed end is too often the training of so-called captains of industry to the neglect of the rank and file*. The need of capable and resourceful workmen is quite as great as that of experienced foremen and scientifically trained managers or directors of great enterprises. Moreover, if we are to discharge faithfully the duty which we assume to be ours of giving every child at least the chance due to it, we must furnish the child likely to become a workman with such an equipment in boyhood as will enable him, by steadiness and by study in youth and early manhood, to rise through the rank of foreman to that of manager or director.

At present two classes of children are favoured: (a) those whose own friends have both the will and the means to secure the right sort of education to develop the individual talent of the child; (b) certain children who by a system of scholarships are picked out from the elementary schools and given similar opportunities to those enjoyed by the children just referred to.

This selection is made when the children are young, and it may be questioned whether the selection is one which does give a fair chance to the child that has other ability than that suited to a commercial or professional career; whether, in fact, the selection does not favour the black coat and ignore the dungaree jacket. The root of the mischief, however, is deeper than this. It is a serious question whether the whole system of modern education up to the most recent days has not devoted itself too assiduously to a one-sided intellectual culture, and so tended to disturb a balance which it is the object of the movement described in this book to restore.

As for the third charge, the premature introduction of the vocational element into the school, we may claim that this has already been met to some extent by our answer to the first and second charges. But be it noted that the dread of introducing the vocational school too early under the guise of manual instruction is due not merely to a survival of the mediaeval prejudice in favour of the linguistic and logical training of the clerk as opposed to the

manual training of the mechanic—a prejudice which has persisted in the teaching profession itself as long perhaps as in any class—but quite as much to confusion of thought. Your pedant has so long been immersed in the abstract that the concrete shocks and offends him. Mental calculations and calculations on paper have so long sufficed that actual calculations with weights and measures, such as the common shopman uses, or with the rule which the carpenter wears concealed about his person, strike him as the intrusion into childhood of a rude experience from which youthful innocence has hitherto been sedulously protected. And when this stage of confusion has been got over, it has been too often only to enter on a further stage, to think that you can teach the use of tools by making nothing in particular, but a generalised object, of no use in itself and therefore—so far goes paradox—educationally sound.

On this hear Stanley Hall's exposure of certain weaknesses he detects in American manual training schools.

“Industry is everywhere and always for the sake of the product, and to cut loose from this as if it were a contamination is a fatal mistake. To focus on process only, with no reference to the object made, is here an almost tragic case of the sacrifice of content to form, which in all history has been the chief stigma of degeneration in education. Man is a tool-using animal; but tools are always only a means to an end, the latter prompting even their invention. Hence a course in tool manipulation only, with persistent refusal to consider the product lest features of trade-schools be introduced, has made most of our manual-training high schools ghastly, hollow, artificial institutions. Instead of making in the lower grades certain toys which are masterpieces of mechanical simplification, as tops and kites, and introducing such processes as glass-making and photography, and in higher grades making simple scientific apparatus more generic than machines, to open the great principles of the material universe, all is sacrificed to supernormalized method.”¹

In Munich Dr. Kerschensteiner has had to meet the same charge as we have been dealing with. There in his continuation schools for lads and young women of from fourteen to eighteen years of age he has founded the finest system of vocational schools in the world. But when in the elementary

¹ *Youth, its Education, Regimen, and Hygiene*, D. Appleton & Co., page 38. This work, a summary of Dr. Stanley Hall's monumental volumes on *Adolescence*, is quoted as the more generally accessible of the two publications.

schools of Munich he endeavoured to prepare the way for the continuation school by a reasonable measure of preparation and co-ordination he was charged with endeavouring to turn *them* into vocational schools. His answer is clear :

“ The essence of preparatory training for manual work does not lie in introducing into our manual training courses, tools, machines and materials that belong to a definite profession. In the same way the essence of preparatory training for intellectual vocations does not consist in dispensing knowledge for a special profession. In both cases the essential thing is to form and practise those organs, mental or physical, which are necessary for the vocation, to form habits of honest work, of carefulness, of thoroughness and of foresight, and lastly to awaken a real joy in work. If any one gains these qualities in any kind of systematic work (*e.g.* woodwork), then he possesses them and uses them in any kind of manual work which his vocation later may call for. It is just the same as with the student who has developed a logical way of thinking, conscientiousness and love of truth by means of a study of Latin or mathematics. He possesses these qualities and uses them later, perhaps not as a philologist, mathematician or scientist, but as a lawyer, historian or philosopher.”¹

For ourselves let us adopt as our formula the words in which Dr. James W. Robertson, late Principal of Macdonald College, Canada, dismissing psychological subtleties of language, has well summed up the matter :

“ Manual training . . . is the general culture of the powers of the body, and of the mind through the activities of the body. . . . It is a training in accuracy, in ability to control self and environment, in expression of thought in deeds and substances rather than in language.”

¹ *The Idea of the Industrial School*, The Macmillan Company, page 28.

CHAPTER II.

THE GROWTH OF AN IDEA.

HAVING thus demolished the giant windmills, without the consciousness of being unhorsed in the process, let us proceed to consider how we have arrived at our present position in the matter of manual work in elementary schools. A convenient opening will be found in a quotation from a paper ¹ published in one of the Board of Education's Special Reports some years ago by Dr. Sadler and the present writer :

“ Throughout the history of education for more than two centuries we can see the struggle of two conflicting ideals. The upholders of one ideal are inclined to an almost hierarchical organisation of society, regard it as essential that every means should be taken through education to increase the technical efficiency of those who by birth are destined in the mass to form the labouring population, and distrust any scheme of school training which throws the greater stress on the imparting of ideas, through literature and the other constituents of what has conveniently been termed a liberal education. Those who sympathise with the other ideal regard it as of paramount importance in education to develop to the uttermost the moral and intellectual personality of each child, believe that such development cannot be fully accomplished except through long and careful instruction in the use of the mother tongue, and through acquaintance with the great tradition of human thought as embodied in history, science, and some great works of literature. There is nothing fundamentally incompatible between these two ideals. Many of those who lay stress on the first are earnestly desirous that every child in the nation should be given access to the intellectual and moral ideas which

¹ Note on Children's Workshops in Sweden, Special Reports, vol. 8 (1902), being an account of Fru Hierta-Retzius' remarkable organisation which has spread far and wide in Scandinavia.

are enshrined in great books, and for the proper study of which some large measure of linguistic training is indispensable. Those, on the other hand, who incline to the second ideal, are ready to submit that manual labour, under present conditions, will be necessarily the lot of the great majority of the human race, and that an education which actually disqualifies a child from fulfilling the duties of that lot is mischievous, however well-intentioned. But each view is liable to a characteristic defect. The first may be applied in a reactionary and selfish spirit, so as to deprive the children of their share in the heritage of human culture ; the other view may be so applied as to deprive the children of those opportunities of early training in, and familiarity with, handicraft which are the natural preparations for skill in manual labour."

The real problem in education is now, as always, how to effect a compromise or bring about a working agreement between the two ideals, how to dovetail into one another the industrial and the literary elements of a child's training. Of old, where and so long as domestic arts and crafts existed, education was as much the work of the home as of the school. In the schoolroom, or the schoolhouse, even though the latter were but a barn or a hovel, the child learnt the literary and numerical elements of its education, reading, writing, and arithmetic ; at home the child watched its father or its mother at work, and, if only at play, exercised its little fingers in imitation of what it saw them doing. And processes were simple : without much formal explanation, the child imbibed slowly and unconsciously a knowledge, none the less real because the child could not define it, of the principles underlying these simple processes. But after the Industrial Revolution, after the discovery and the application of steam-power, came the factory system ; the hearth grew cold, and the home side of education faded away. There followed the horrors of bare unabashed industrialism in our growing towns, horrors familiar to those who have studied the early history of the Ragged School Movement, or who know their Dickens, and have read Disraeli's *Sybil*, when children ran wild with neither home nor school, or, hardly out of infancy, were swept into factory, or mill, like animals, to serve their elders through long hours of joyless, soul-destroying, body-stunting drudgery. Then came the Factory Acts, and, late in the nineteenth century, after years of noble voluntary effort on the part of the Churches, and no less admirable exertion on the part of lay philanthropy, an Act establishing compulsory education, which swept the children from the streets into school, and while not clearing the factory

and mill altogether of young children, shortened the hours of child-labour, and compensated the child for some loss of manual drudgery, by providing it with equivalent drudgery of another sort.

It was natural, when a universal school system was introduced, that the school should take up that side of education which had always been recognised as its province, viz. the literary and numerical. But the report on Manual Instruction in Public Elementary Schools issued by the Board of Education in 1910, to which reference is made later in this chapter, affords curious evidence that an industrial side in education persisted until positively destroyed by the administrative action of Government.

“ The need of a certain amount of manual occupation in the curriculum of an Elementary School has been recognised from the earliest days of our educational system. The first Form of Report issued to Inspectors in 1840 contains two subsections dealing with Handwork: one for Industry, including Knitting and Sewing, Strawplaiting, sweeping the school floors and keeping the garden border free from weeds; and another for the Imitative Arts, including Drawing, either on the board or on the wall, as a preliminary to Writing. Work of this kind, however, fell into abeyance owing to the stress of the Examination system introduced by the Revised Code of 1862. Teachers quite naturally came to regard matters not included in the Schedules of Examination as extraneous and unnecessary, however educationally desirable they might be.”

However this may be, after 1870 the developments called for were on literary lines, a smattering of history and geography, and some tincture of pure literary culture. A dash too of science was early introduced, largely through the influence of the great Triumvirate—Huxley, Tyndall, and Spencer—whose writings and speeches spread some hazy notion that scientific fact was the same as moral truth, a scientific experiment more than the equivalent of a logical syllogism, and the book of nature quite as reliable a guide to conduct as the Bible.

Even then something was soon felt to be wrong. The curriculum was lopsided; those pulling at the educational oar experienced something of the discomfort of rowing in a badly balanced boat. The first idea that occurred to people was to restore the balance by introducing as make-weights subjects of another kind, manual not mental. It was impossible that a man or woman working in a slum school, should fail to recognise the incongruity of teaching

ragged, hatless, unshod, even verminous children, stocks and shares, history and geography, and literature, without some effort to place in their possession the means of leading a clean and decent life, and of enjoying a modicum of wholesome leisure. Needlework and cookery and laundry-work had irresistible claims for girls : for no pedagogic purist was ever so petrified in pedantry but in his heart of hearts believed that a girl could not begin too young to learn how to sew on his buttons, boil his potatoes, and wash his shirts. The case of boys was not so simple. To meet their needs a formal system of manual instruction was evolved, mainly based on the doctrines of Swedish Sloyd. Though English teachers have advanced far beyond anything practised at the School of Nääs, they will not forget the debt they owe to Otto Salomon, the school's director. His scheme was narrow, perhaps, and over-methodised ; but in England we should not be where we are to-day but for the enthusiasm he kindled in pupils who have outgrown his teaching, not in spirit but in letter, and, on the foundation laid by him, have erected an edifice more variegated than he ever dreamed of.

What has brought about the vast development that has taken place during the past ten years in our notions on the place of hand-work in education, and has turned manual instruction from a somewhat dull series of exercises in tool-manipulation to a field of activity with a range conditioned by little more than the teacher's industry, skill, inventiveness, or ambition ? A fermentation of ideas, the result of various leavens working on the consciousness of teachers and many co-operating with them, has brought about this change, and will bring about changes still more wonderful.

(1) The sense of the loss of the old home side in education has deepened as people have realised more and more how difficult it is under modern conditions for even a good home to discharge fully the duties of a home. We want to introduce into the school more of the atmosphere of life as it is lived, to give the scholar more of the environment of life ; for it is atmosphere and environment far more than direct instruction that give character.

(2) Pestalozzi has come into his own. His principles, procedure from the concrete to the abstract, learning by " doing " things, not merely by " thinking " or " talking " about them, the development of intellectual knowledge out of its origins in sense perceptions, the stimulation of mental growth by the encouragement of self-expression, always a high moral purpose, always freedom, in view, these were the principles preached by Fichte, adopted by

Stein in the hour of Germany's deepest humiliation, the principles on which was founded a hundred years ago the Germany of to-day.

The mantle of Pestalozzi descended upon Froebel, and in the scholastic sphere his elaborate working out of Pestalozzi's ideas, with rich contributions of his own, resulted in a type of infant school adopted all the world over. But the very success of the Kindergarten rendered more glaring the contrast between infant schools and the junior classes of schools for older children. How to bridge the gap remained a problem until solved in this twentieth century by the introduction of hand-work right through the elementary school.

(3) Had Froebel lived to work out his ideas for older scholars our elementary schools would have been very different from what they have been. Possibly, however, we have not lost so much as might be imagined: we might have been over-methodised. Complaints that method has been overdone in the Kindergarten have not been unheard, and have assisted to open the door to Dr. Montessori's passionate plea for the cultivation of individual freedom. Since Rousseau no one has urged so uncompromisingly the claim for the free development of the individual child, and on reading her own deliverances (rather than those of her exponents) one is strongly attracted to her view. But we have to remember that even in her own educational experiments the teacher plays a necessary part, and a part distinguishable less in kind than in degree from that played by many a teacher in a Froebelian school whose natural disposition has led her to teach by suggestion wherever possible. A compromise is inevitable between this ideal of self-development, and the social ideal—education for citizenship—which also agitates the modern world. The individual exists only in society. A useful corrective to the one-sided view which may result from an unreasoning extension to older children of Dr. Montessori's claim in behalf of infancy, an extension possibly quite unauthorised by herself, will be found in two books by another great educator, Dr. Georg Kerschensteiner's *Education for Citizenship*¹ and *The Idea of the Industrial School* already cited. In these two books, neither of them bulky volumes, though the interests of the individual are by no means ignored, the social ideal is eloquently preached. To us, arguing the case for manual work in schools, the special interest of studying the views of great educators of the past, and of those of to-day, lies in the fact that, whatever the ideal they hold out, for the realisation of their ideals they come back to the work of the hands.

¹ English translation published by George G. Harrap & Co., 9 Portsmouth Street, Kingsway, London, W.C.

They find manual work invaluable as a means of intellectual development, invaluable as a means of self-expression, invaluable as a means of keeping the individual in touch with life.

(4) In the service of child-study have been enlisted physiologists as well as psychologists, with the result that experimental psychology has established a physiological basis for the claims put forward by Rousseau and Pestalozzi, and countless psychologists since their day, that the sense of touch plays a most intimate part in developing the child's consciousness; and no less a claim is now put forward that the hand is an organ of thought. Over thirty years ago C. G. Leland, an ardent apostle of manual training by way of art-craft, but whose hope of immortality rests on the Hans Breitmann ballads, declared that "from seven to fourteen years a certain suppleness, knack or dexterous familiarity with the pencil or any implement may be acquired which diminishes with succeeding years." The practical truth of this has been proved by experiment of the most ample range. If any one doubts it let him consider whether he ever heard of a first-rate pianist whose fingers were not exercised on keys or strings long before the age of fourteen! But the claim of the physiologist goes beyond this, and, for the sake of the title of this book, it must be stated with some fullness. A now familiar statement of the claim will be found in the introduction to the Board of Education's syllabus of physical exercises. "There are in the brain certain 'centres' or masses of brain matter which preside over co-ordinated movements of all kinds. These centres begin to perform their functions in early life, when the child learns to stand, to walk or to talk. As new movements are attempted, new centres become active, certain nerve impulses become more or less habitual, and thus new nerve paths are opened up and established, and the connections between the centres in different parts of the brain become increasingly well-defined and co-related. It has been found that within reasonable limits the greater the scope of the physical education, the more complex and highly specialised and developed do these centres become."

The argument is worked out with more refinement by Stanley Hall in his great work on *Adolescence*. "Too much," he says,¹ "must not be claimed for the basal, e.g. hill-climbing, muscles of leg and back and shoulder work, and of the yet more fundamental heart, lung, and chest muscles." He says, indeed, that "the motor areas are closely related and largely identical with the psychic, and muscle culture develops brain centres as nothing else yet

¹ See *Youth*, Chapter II.

demonstrably does. Muscles are the vehicles of habituation, imitation, obedience, character, and even of manners and customs. For the young motor education is cardinal . . . and for all education is incomplete without a motor side," and he goes so far as to claim that "the hand is a potent instrument in opening the intellect as well as in training sense and will." But he makes a clear distinction in muscle structure and function between the fundamental and the accessory. "Perhaps the best scale on which to measure all normal growth of muscle structure and functions is found in the progress from fundamental to accessory. The former designates the muscles and movements of the trunk and large joints, neck, back, hips, shoulders, knees, and elbows, sometimes called central, and which in general man has in common with the higher and larger animals. Their activities are few, mostly simultaneous, alternating and rhythmic, as of the legs in walking. . . . The latter or accessory movements are those of the hand, tongue, face, and articulatory organs, and these may be connected into a long and greatly diversified series, as those used in writing, talking, piano playing. They are represented by smaller and more numerous muscles, whose functions develop later in life and represent a higher standpoint of evolution. These smaller muscles for finer movements come into function later and are chiefly associated with psychic activity which plays upon them by incessantly changing their tensions if not causing actual movement. . . . The entire accessory system is thus of vital importance for the development of all the arts of expression. These smaller muscles might almost be called organs of thought." And his conclusion is: "the education of the small muscles and fine adjustment of larger ones is as near mental training as physical culture can get ; for these are the thought muscles and movements, and their perfected function is to reflect and express by slight modifications of tension and tone every psychic change. Only the brain itself is more closely and immediately an organ of thought than are these muscles and their activity, reflex, spontaneous, or imitative in origin."

In support of the claim that manipulative exercises give an intellectual stimulus, a mass of evidence is being accumulated by practical teachers as their interest in the experiment widens, and by their testimony the plain man is more likely perhaps to be impressed than by volumes of scientific disquisition. There is no teacher in a school for mentally defective children who does not support the claim ; many did so long before they heard the name of Montessori. To teachers in general much encouragement was given by a semi-official endorsement of their experiments given in the Report of a

Committee of H.M. Inspectors on Manual Instruction in Elementary Schools, issued in 1910. The encouragement was semi-official only, for the method of publication was somewhat peculiar. At a time when the Board of Education was issuing a series of documents in the nature of decrees, this particular report was laid tenderly on the educational doorstep like a bantling of whose legitimacy the Board was not fully assured. But it was a comely infant and did not lack for sponsors. It gave a wide interpretation to manual instruction; it provided a useful summary of the arguments in its favour, and a most informing account of what is being done in the country, and it added valuable and far-reaching suggestions with regard to organisation and method. Moreover, it urged all its points with a modesty and restraint which rendered it all the more effective. It remains the best short statement of the case yet produced.¹

¹ *Manual Instruction in Public Elementary Schools*, Wyman & Sons, Ltd., Fetter Lane, London, E.C., price 3d.

CHAPTER III.

ON THE APPLICATION OF PRINCIPLES.

THE considerations on which we have dwelt in the last chapter have established the basis for our claim that manipulative exercise shall find a place in our elementary school curriculum. It is a basis the foundations of which have been laid after the researches of many an earnest student into studies which can be characterised in terms of suitable gravity, studies historical, studies sociological, studies pedagogical, and studies geneto-psycho-physiological. Our argument on behalf of manual instruction can be resolved into the following six reasons :

- (i) to develop certain centres in the brain ;
- (ii) to develop manual dexterity at the age when it must be developed if it is to reach the pitch it should in maturer years ;
- (iii) to afford scope for the constructive faculties, or, if the term " faculties " be objected to, to afford scope for self-expression through the exercise of the motor activities ;
- (iv) to make school subjects more real to the child : in other words to bring into relation with every possible subject in the curriculum the third dimension ;
- (v) to keep the child in touch with its environment, with what life means to *it*, not to some imaginary child brought up in an atmosphere of late-Victorian culture ;
- (vi) to give it something to do which it recognises as definitely useful, and thereby to implant the germ of the idea of usefulness, the fruit of which is social service, the very condition of the existence of civilised society.

If we have all these purposes in view when we call for the introduction of manual work, it is vain to seek for one scheme, one kind of material, one tool

or set of tools which will accomplish all. True, we cannot devise any scheme which will not satisfy at least three requirements, for the first two, the development of brain centres and of manual dexterity, will be bound up with every imaginable scheme. But the common-sense conclusions seem to be these :

- (a) we need several sets of exercises in different materials, each devised to carry out one main purpose ;
- (b) the main purposes on which stress will be laid will differ (i) in different schools, (ii) at different ages, and, if the school be large enough, (iii) with different children of the same age ;
- (c) the time to be devoted to manual work will vary at different ages and in different schools, the limit of the manual side in any case being the point at which it ceases to foster the all-round, intellectual as well as physical, development of the child.

These conclusions, it may be submitted, secure two essentials ; they afford infinite scope for the teacher, if he will only avail himself of the liberty offered him, and, properly applied, safeguard the individuality of the child. On the application of them in detail there is no need to dwell here ; the photographs at the end, illustrating what is going on in a single city, will show more clearly than any words can do how great is the variety of schemes open to choice. But there are certain general considerations which must be emphasised.

(a) While recognising the value of manipulative exercises in education, we must not forget that the formal teaching of reading, writing, arithmetic, history, geography, and the rest has still in due measure to continue, and that much of the formal teaching of the past was good and will persist. We are not to replace one cast-iron system by another. We are to modify method maybe, but we must still have practice with the old-fashioned tools and materials, reading-books, arithmetic books, paper, pencil, and pen. Much harm is done by thoughtless, indiscriminate abuse of books, and the entire condemnation of abstract teaching. Even on physiological grounds, as has been pointed out in the last chapter, an individual's physical development will be incomplete without exercise of the fine movements brought into play by reading, by writing, and by calculating. The point is that the tendency has been to work them too hard, too exclusively, at an age of peculiar delicacy from the developmental point of view. Above all, a certain amount of formal arithmetic must be taught in addition to exact measurement—and the appli-

cation of the foot-rule in the workshop. The latter will fertilise the former, but in its turn will be a husk without it. The recognition of this simple truth will save bitter disappointment, and the timid may be reassured by noting, from the schemes set out in Appendix II., with how small an allowance of time to manipulative exercises sound educational work can be done.

(b) It is a mistake to worry over equipment. Most elementary schools to-day are without a workshop, or even a lumber room such as may provide a real workmanlike makeshift. They will be without workshops for many a long day. There are in many large towns manual instruction centres, to which boys go in drafts from this school and that, each for the weekly turn nicely calculated to earn the Government grant. Much can be done with the aid of the re-juvenated centre, where no longer a rigid monotonous course of exercises in little more than the handling of tools is prescribed, but free constructive work is finding a place, and the making of wholes not parts is the rule ; where, too, the handicraft instructor is in close touch with the class-teacher, and the two are working together. But many a school-teacher is not satisfied until manual work of some kind is being done under his own eye, within the walls of his own school, even where conditions are circumscribed by the need to restrict his manipulative operations to work adapted to desks designed for literary studies. The ingenuity, indeed, of the teacher has often made light of material obstacles : and the very homeliness of makeshift arrangements, of rough and ready apparatus, of desks converted for the nonce into benches, and the working up into new creations of the covers of old exercise books, of old boxes, old tins, gives an agreeable desert island, Swiss Family Robinson feeling, which is not only a relief from the air of the conventional class-room, but in itself is congenial to practical work. And to what boy does not camping-out, even in the school-room, make its appeal ?

(c) There is danger in brooding too much over the " educational value " of a particular piece of hand-work. The term " educational " is to be taken broadly. Educational value is there if the work, whatever it be, is attacked by teacher and pupil with zest, and in a right spirit.

Too often the question, " What is the educational value of this occupation ? " asked by a pedant who does not understand the value of *all* real constructive work, because he does none himself, but spends a parasitic existence watching others at work, has chilled that enthusiasm which is the teacher's most precious possession. There was once a Convent School where the Superior, anxious to bring a whiff of the outer world into the somewhat cloistered exist-

ence of her charges, introduced a shop. It was more than a tuck-shop ; the girls had money to their credit, were given coins of the realm to keep in a purse, and bought at the shop their school-books and school-materials, their toys, their hats, ribbons, gloves, the stuff for their various garments, and what not ; girls served at the counter, girls kept the books. One day there entered an Inquisitor : he praised the institution of the shop, but presently suggested that it would be more " educational " were cardboard coins substituted for the real ones. " This," said he, " will make clear to the children the first lesson in political economy, viz. that money is but a symbol." O wise pedant ! It will generally be found that the critic who questions the educational value of any piece of hand-work on which teacher and scholars are keen has not himself got beyond the stage of geometrical models in cardboard, and if he possesses imagination, only that

" Which towers a flight three hedgerows high, poor bat."

(d) Scarcely less is the danger at the outset of worrying too much over neatness and accuracy of work. It is perfectly true that one of the great values of hand-work is the training it gives in accuracy. But this must not be regarded as its main value, and must not be pushed to the extent of discouraging teacher and child. Be it remembered that almost every piece of hand-work has the advantage claimed for the Montessori apparatus ; it is self-corrective. A child may or may not know of itself whether a sum is right or wrong, whether a word is rightly or wrongly spelled ; it has no doubt as to whether a lid will fit on to a box or not, whether a toy boat is lopsided or not, whether a doll's clothes are too small or not, whether a model pump leaks or not, whether a tin-pot steam engine works or not. The age of children in our elementary schools, particularly of the elder ones of thirteen, is a critical one ; the latter is just the age at which a child, *if it shows any earnest purpose whatever*, should receive a word of encouragement however poor may be performance. As for the teacher, if he is keen, or even if he shows interest, encouragement often does quite as much as skilled advice. It will be within the experience of all who have watched the growth of hand-work in elementary schools how the standard of work grows, subconsciously as it were. One generation of boys and girls works to a higher standard than its predecessors. The teacher visits another school ; he sees work better than his own ; even though he may not definitely formulate a new standard in his mind, the standard formulates itself. Meticulous criticism comes in useful when, as does occur,

the cocksure stage is reached prematurely in teacher or pupil. To the attitude of sympathetic encouragement on the part of H.M. Inspectors is largely due the success of this new movement, and it is right that this tribute should be paid to them. The Board's local inspectors have to live with people; they are, so to speak, de-bureaucratized. Rarely indeed in them, though perhaps elsewhere, persists the spirit that animated Jane Austen's Lady Catherine on her visits to the Collins family.¹

“ Now and then they were honoured with a call from her ladyship, and nothing escaped her observation that was passing in the room during these visits. She examined into their employments, looked at their work, and advised them to do it differently; found fault with the arrangement of the furniture, or detected the housemaid in negligence; and if she accepted any refreshment, seemed to do it only for the sake of finding out that Mrs. Collins' joints of meat were too large for her family.”

(e) The liberty accorded to the teacher must be a real liberty. This is a delicate point. It is not only teachers that call out for liberty; Local Education Authorities are beginning actively to resent the coil of a central bureaucracy drawn tighter and tighter. The child, all are agreed, is to be allowed freedom for proper development. Why not the teacher? Why not the Local Education Authority? But all teachers have not initiative; no more have all Local Education Authorities. Some stimulus, some guidance may be necessary. If, however, your teacher does show particular interest in a particular line, let him follow it in Heaven's name. Don't divert him to another in which you, the critic, happen to be interested; be even careful of urging him to follow other lines as well, for they may distract his attention and dissipate that concentration of energy which is often the secret of a man's success. If he is keen on history, and wishes to apply his hand-work to the illustration of that subject, let him; either by making models of castles, fortifications, the pillory, the stocks, and all the amenities of by-gone ages in which children delight, or by following Dewey of Chicago's sociological lead, and constructing models of the habitations of man at all ages, or by making costumes and properties to be used in dramatisation. If Geography be his subject, then let him produce relief-maps, picture-maps, models of river basins and the like, or follow the anthropological line and call for models of the villages, houses, temples, river-boats, queer hats and shoes, utensils

¹ *Pride and Prejudice.*

or tools of a chosen country or continent. If he has a mechanical turn, let him set his boys to work at light woodwork or metal-work, making cranes, inclined planes, pulleys, pumps, water-wheels, gliders, aeroplanes, steam engines, and even dynamos. If his bent is science, let him either devote his energies to nature-rambles, and the mounting of specimens, or to the making of simple apparatus through the use of which his pupils will gain some notion of the elements of experimental science, and paddle on the shallow margin of the infinite unknown. But because the work in history is good, don't rush on to urge him to apply the same method to geography, mechanics, and science. There is scope for all, but be content with one, if there is life in it. The class will be content, for children are singularly responsive to a teacher's enthusiasm ; the magnetic influence of an enthusiastic teacher is irresistible ; the quality ranks equal with kindness and only below honesty. In any case, bear in mind that if the head teacher will allow his class-teachers some of the freedom he claims for himself, the school will not lack for variety in the application of hand-work to the passive subjects of the curriculum.

Finally, where guidance is required, or, as will often be the case, desired, let it be by way of suggestion, not of command. In this twentieth century it may prove not amiss to adopt, in the matter of administration, the Miltonic adage, and " make persuasion do the work of fear," fear, whether it be of police-court fine, or of those solemn official acts known as " sur-charge " and " withholding of grant."

CHAPTER IV.

ON WORK AND PLAY.

THERE may be much agreement with what has been said, and yet the impression may be left on not a few that something is lacking from a full and satisfying presentment of the case. Is there not too much play about all this hand-work? Does it not carry Kindergarten principles too far on in life? Is not something more serious and more definite required if the child at fourteen is to go on easily and naturally to continuation classes or the technical school?

To meet these objections let us endeavour (1) to demonstrate the moral value, for we shall use no smaller term, of hand-work, and (2) to indicate by a single definite illustration how the last year of elementary school life can, without undue specialisation, be brought into close relation with the technical school.

With regard to the first point, the reader may be invited to glance again at the brief account given in Chapter II. of the loss of the home side of education. Now it is not to be supposed that a really valuable part of the child's education was to be got in a home where the child was actually put to labour by parents playing the unlovely part of taskmasters. The right conditions were obtained where the child, watching the father or mother at work, followed the irresistible call of instinct and played at doing the same work, or spontaneously took actual part in their work, either fetching or carrying for them, "serving" them, or engaging actively in the lighter operations of the parental craft. What is work? What is play? How differentiate between them? One is real work, you say, the other imitative or artificial work. But that depends on the point of view, whether you take that of the pompous sophisticated adult, or that of the naïve unassuming child. To the child a toy is a real thing, and has *uses* infinite in variety. Even at the risk of incurring the

charge of pedantry an appeal may be made to Plato. "Let early education," he says, "be a sort of amusement; you will then be better able to find out the natural bent." But he recognises how mixed up are sport and earnest, and elsewhere, snapping his fingers at Areopagitical critics of vocational education, he says:

"According to my view anyone who would be good at anything must practise that thing from his youth upwards, both in sport and earnest, in its several branches: he who is to be a good builder should play at building children's houses; he who is to be a good husbandman, at tilling the ground; and those who have the care of their education should provide them when young with mimic tools."¹

When a child is making mud pies, it is at play. Why not when it is kneading pies of dough? When a boy scout is engaged on bridge-building, is he at work or play? A candid adult must admit that the confusion between work and play is not all on the child's side. The stalwart parson of a southern parish, great cricketer and excellent parish priest, exclaimed as he returned to the tent on the village green after a merry innings: "The worst of playing cricket three days a week is, it makes a man so busy." He spoke as a boy, and his full meaning requires a man with the mind of a boy to appreciate it without attacking the principle of a State Church. Many happy individuals are able all their lives long to approach at least some of the routine of their daily work in a playful spirit, and they are all the more efficient in consequence.

Nevertheless, when the best has been said for instruction by recreative method, it may still be doubted whether enough real useful work as distinguished from artificial substitutes for work has found its way into our schools. By manual work, says Dr. Robertson, in his evidence before a Committee of the Canadian House of Commons in 1903, a boy "is taught to think clearly towards an end believed by him to be useful." What stimulus do we afford the child in this regard? A course of geometrical models in cardboard is good, no doubt, and useful; but the main purpose subserved is geometry. The making of apparatus for science-teaching or of models to illustrate history and geography lessons, or for use in the infants' school, is also good, and useful at the same time. But far more directly is the idea of utility served if the child is encouraged to make something for its own use or the use of its home.

¹ *Laws*, I. 643 (Jowett's translation).

Here the girls have had an advantage, for their manual work in school has always been bound up with the idea that, whatever their future occupation in life, their prospects of happiness, even of contentment, are bettered if they are good housewives, good home-makers. There may be some who deny that this ideal is a sound one for girls, who declare it to be in these days of emancipation, a reactionary, a narrowing ideal. To that the answer is: The ideal is not only a sound one for girls, it is also a sound one for boys. It is the appeal of this argument to the practical intelligence of a manager in one school and of a teacher in another that first gave us some years ago in Liverpool the spectacle of boys cooking a meal, darning their own socks or stockings, and mending their own clothes, mending them indeed with such zest that a watch had to be set lest they should cut holes in their breeches for the sheer pleasure of mending them. How much is there to be said for work such as this! How little against! Is not this the sort of work we envy in the handyman, the sailor-man? Is not this the sort of idea that has prompted the scout movement? The mandarin may pass unmoved, but the superman has said:¹

“ In all things to serve from the lowest station upwards is necessary ; to restrict yourself to a trade is best. For the narrow mind whatever he attempts is still a trade, for the higher an Art ; and the highest in doing one thing does all, or, to speak less paradoxically, in the one thing which he does rightly he sees the likeness of all that is done rightly.”

Can anyone imagine work more truly educative for the schoolboy in one of the poorer quarters of our large cities than the mending of his own breeches, stockings, and boots? The work has a deeper significance than may at first appear. The boy is not merely doing something useful, he is doing something calculated to raise his self-respect ; and he will be dull indeed if on his consciousness does not dawn after the idea of usefulness to himself that of usefulness to his mother, and to others about him. And just as it will do the boy good to give him a turn once a week in the Girls' Domestic Centre, so it will do the girl good to set her to work once a week with hammer and nail in the Boys' Workshop. Stress is to be laid upon this idea of usefulness, because the possibility of implanting even in germ the idea of social service is a valuable addition to the list of virtues ascribed to manual work by Professor William James, least sophisticated and most human of philosophers.

¹ Goethe, in *Wilhelm Meister* (Carlyle's translation).

THE THINKING HAND

“The most colossal improvement which recent years have seen in secondary education lies in the introduction of the Manual Training Schools ; not because they will give us a people more handy and practical for domestic life and better skilled in trades, but because they will give us citizens with an entirely different intellectual fibre. Laboratory work and shop work engender a habit of observation, a knowledge of the difference between accuracy and vagueness, and an insight into nature’s complexity, and into the inadequacy of all abstract verbal accounts of real phenomena, which once wrought into the mind remain there as life-long possessions. They confer precision ; because, if you are *doing* a thing, you must do it definitely right or definitely wrong. They give honesty ; for, when you express yourself by making things, not by using words, it becomes impossible to dissimulate your vagueness or ignorance by ambiguity. They beget a habit of self-reliance ; they keep the interest and attention always cheerfully engaged, and reduce the teacher’s disciplinary functions to a minimum.”

Now let us proceed to give our promised illustration of how in the last year of elementary school life the manual work can be so specialised, so intimately associated with a subject admittedly intellectual in the highest and driest sense of the term, that without the faintest suggestion of vocational taint the elementary school child may pass as naturally and as well prepared to the technical school as does the boy of classical training from the private preparatory school to the public school. It has been claimed that the scheme of work in an elementary school may have a certain bias without infringing the principle of a general education. But it is time enough to develop the conscious bias when reason begins to assert itself, when the child reaches the topmost classes of the elementary school, with short but precious time in front of it of which much may be made if it be wisely used. Up to the stage when reason begins to play its part it does not matter much, within the limits of common sense, what is taught ; the way the teaching is done, and the spirit in which it is done, are the main concern. The young child, as Mr. Temple has happily expressed it, is powerfully impressed by what it cannot understand precisely because it cannot understand.

“If he could understand he could also criticise ; but as he cannot understand he is of necessity passive in the hands of a force which he cannot resist because he is unconscious of its existence. . . . The early

influences to which the child unconsciously submits are in normal cases the most powerful determinants of its character, both because they operate while the soul is still plastic and because the child has offered no resistance.”

This is the view of ancient philosophy, and it is confirmed by modern psychology. But there comes a time, and that before the elementary school age is passed, when the child is not satisfied with assimilating the results of observations made through its senses. It begins to chew the cud, to ruminate, to think, to criticise. Now is the time when it is not merely safe, but actually imperative, to give definition to our scheme if we are to do full justice to our charge.

As a basis on which to found our preparation for technical training, a course in practical physics may be suggested. We shall naturally commence by developing the practical arithmetic in the elements of which we may assume our juniors have already been drilled. The practical arithmetic of the seniors will include graphs and the use of symbols, and lay stress on the measurement of length, of curved lines, of the ratio of the circumference of a circle to its diameter, of area, of rectangular figures, of the circle, of irregular figures, of volume, of regular and irregular solids. There will then follow instruction and practice in the use of simple measuring vessels, the use of the balance and the density bottle, and experimental proof of Archimedes' principle and its application. For a definite course by which to lay our line of instruction we may consult the *Report on Science Teaching in Public Schools* issued by the Board of Education in 1909, one of the valuable series of reports published from time to time, which give, not the views of theorists, but actual schedules in use by men and women engaged in the art of teaching. In Appendix II. of that report will be found a most ingenious scheme, the first year's syllabus of which is here appropriated.

It may be doubted whether even an English public-school boy of from twelve to thirteen can digest so much in a single year, but as this is apparently taken for granted, we may hazard the suggestion that the English elementary-school boy can attack it with fair success in two. The syllabus is as follows, and the treatment of subjects all through must be understood to be qualitative, not quantitative. Though the list of nominal subjects is long enough in all conscience to preclude any charge of too intensive a culture, one thread runs through each series, and another connects them together, so that the whole effect is as satisfying artistically as that of a cave-man's bone and shell necklace.

THE THINKING HAND

PHYSICS SCHEME.

MECHANICS.	HYDROSTATICS.	LIGHT.	HEAT.
Levers.	Barometer.	Mirrors and lenses.	Steam pressure.
Moments.	Siphon pumps.	Telescopes.	Steam gauge.
Work.	Fountains.	Microscopes.	Simple steam engine.
Speed ratio.	Water press.	Lantern.	Hot air engines.
Efficiency.	Balloon.	Spectacles.	
Mechanical advantage.	Air pump.	Eye.	
Wheel and axle.		Colour.	
Windlass.			
Capstan.			
Pulleys.			
Cranes.			
Belts and shafts.			
Bicycle.			
Toothed wheels.			
Inclined plane.			
SOUND.	MAGNETISM.	VOLTAIC ELECTRICITY.	FRICTIONAL ELECTRICITY.
Idea of waves.	How to make a magnet.	How to make a simple battery.	How to produce electricity.
String instruments, piano, harp, etc.	Action of current on magnet.	Use of resistance coils, commutators, shunts, galvanometers, ammeters, voltmeters.	Electroscope.
Resonance boards.	Electro-magnet.		Leyden jars.
Wind instruments.			Lightning.
Organ pipes.			
Whistles.			
Siren.		Electric light, bells, induction coils.	
Musical scale.		Dynamo.	
		Motor.	
		Electrolysis and electro-plating.	

The claim must be conceded that this is a successful attempt to arouse interest in scientific study, and particularly in physics, by giving some insight into the application of principles to the phenomena of everyday life. And

what a wealth of suggestion for the manipulative work of the boys is contained in the scheme, if, as ought to be the case, they make for themselves the rough working models of machines, instruments, and apparatus absolutely necessary for the illustration of each section! It is difficult to imagine a happier union of handicraft and science. And the very difficulties that the boys will encounter in their manipulative work will, as the author ¹ of the scheme claims, show them the need for, and the value of, further work, *quantitative* and not merely *qualitative*, if they are to make conscious progress. Thus they cannot fail to develop something of that scientific temper of mind, which, rather than the mere acquisition of facts, should be our aim.

We make bold to claim that such a scheme as is here outlined cannot reasonably be attacked as specialisation. It does give a bias, but such a bias as may legitimately characterise a general education. Boys who have taken advantage of it will have had their general intelligence sharpened, will have cultivated the scientific habit, and be in a position to attack methodically whatever sort of problem is presented to them, and will have acquired incidentally a vast amount of useful general knowledge; and all these acquirements, while undoubtedly to the advantage of the lad passing on to a specialised course in technology, will none the less be no handicap, but a precious possession, to the boy of fourteen who enters retail trade, or specialises later on the clerical rather than the constructive side.

¹ Mr. W. E. Cross, Headmaster of the Grammar School, Maidstone.

CHAPTER V.

A DREAM

AT this stage, if not earlier, some reader may suggest that the writer of this book has not carried out the promise of the first paragraph of Chapter I., that he has not kept clear of pretentiousness, that here and there he has been dull, and that at times he has had the impertinence for one of his status, which is that of an uncertificated teacher, to dogmatise. Before then we plunge into the matter of fact of Chapter VI., let us leave dogma altogether and take refuge in a dream. The future is with the dreamer, for the dream of to-day may well become the accepted truth of to-morrow. If anyone sneers at the dream, we may take it that he is at least forty-five years of age, probably one of the forces now controlling education, a head-teacher of experience, a senior inspector or high official under Government either Central or Local, or a professor, everyone of whom in twenty years will, in obedience to the law of nature or superannuation, have surrendered his charge. With this sobering thought in our minds let us bear with the dream whatever it be.

There is nothing original in this book, and the dream we are about to relate is not more original than the rest of it. The dream is taken straight from Zola, who took it at several removes from Fourier. Dreams, unfortunately, require a deal of explanation, and this dream in particular cannot be appreciated without some understanding of the personalities of the individuals who dreamed the dream.

Émile Zola has himself to blame that he has been a man misunderstood. Few men underwent so much obloquy during their lives, and so deservedly. But in return for his heroic intervention in the Dreyfus case much was forgiven him. It set people reading him afresh and pondering over the riddle of his books. The view that he was the first of the Realists had indeed been abandoned earlier for the subtler, and cynical, view that he was the last, and

worst, of the Romanticists. But now it began to dawn on people that through all the muddy expanse of his works ran a slender rill of idealism, a yearning for the redemption of humanity from the brutal conditions which the sordid misery of his own early life had made only too familiar to him, and that this rill broadened and deepened as years went on, until he ceased merely to paint in crude colour the nakedness of life, but threw his main energy into vast, at times grotesque, projects of reform.

The last series of works he projected consisted of what he called the four gospels of "Fecundity, Work, Truth, and Justice." He did not live to complete the series, but the Utopia whose system of education is presently to be described occurs in the second, the Gospel of Work. He drew his inspiration from Fourier, an even more perplexing philosopher than Swedenborg, and set himself the task of reviving and popularising Fourier's Utopian scheme for the reorganisation of society, and incidentally of education.

Fourier,¹ the source of Zola's inspiration, was a contemporary of Robert Owen, and there are many similarities in their schemes for the reconstruction of society. He had not the vigorous personality, and the practical philanthropic energy which make of Robert Owen so attractive a figure, but he had a far finer intellect, was an educated man, and possessed a full measure of the insanity of genius. His idea was to reconstruct society out of a series of groups which he called *phalanges*. Each of these groups was composed of a number of what we may style family groups of eight or nine individuals, each of whom had, to use Goethe's term, some "elective affinity" to hold them together. The main group was to be made up of about eighteen hundred persons, and each main group was to organise its life in common. Members were to live in one vast building called a *phalanstère*, a sort of combination of the General Post Office, Harrod's Stores, the Stock Exchange, and the Hotel Metropole, and as beautiful a building as the best of them. Private apartments were permissible for those who preferred them, but the general rule was to be a communal existence. As you would have industrial groups, commercial groups, agricultural groups, etc., etc., so you would build up your whole society. The agricultural groups, the industrial groups and the rest would be indispensable to one another and thus have an irresistible

¹ The account of E. Reybaud in his *Réformateurs Modernes* is here followed. That account is not unsympathetic on the whole, though it may be admitted that the quotations he gives from Fourier's works do not fully illustrate the saner side of his genius. One enthusiastic disciple of the master is not content with less than to style Besançon, his native place, "this modern Bethlehem."

interest for one another ; and these interests being indispensable to one another, and at the same time different, could never clash. The need of a central government practically disappears, for what is the need of a central government but to keep the peace in a badly organised society resting on no scientific basis? If wanted at all, it is for ornament, not use, though as ornament it is not perhaps to be despised.

All this reads as artificial and inhuman as most Utopian reconstructions of society, but Fourier rendered both to political thought and to social development at least one signal service which should keep his name alive. He drew so clear, so striking a picture of the advantages of co-operation that it is probable that everyone who has since written in its favour has either borrowed from him first-hand, or second-hand from some other borrower. More perhaps than on his native France he left his mark on Russia, Germany, and the United States.

Moreover, though Fourier had not that inborn personal love of children which does more than anything else to render a man lovable himself, he recognised the vital importance of childhood, and on schemes for the welfare of children he lavished some of his sanest and some of his insanest thought. Was the man sane or insane who wrote the following passage in his *Traité d'Association* ?

The Kitchen considered as a means of Education.

“ Nowadays young children are refused access to kitchens for various reasons. First, they are clumsy and break the crockery. Second, they upset dishes and dirty their clothes. Third, they get burnt ; they don't know how to handle fire, and have to be kept even from getting near it. Fourth, the number of infants in our kitchens is too small to enable us to organize their work in groups. Fifth, particular departments of work such as plucking, sorting and washing, skinning, do not offer work in large quantities. Sixth, our kitchens are without a special department for child-cookery, etc.

“ Thus the first school of childhood is closed to it. I call it the ‘ first school ’ because its stimulating effect is greater than that of any other. . . . A single roast on a spit offers no attraction to the child as we know it ; but there is an attraction for the children of (our State of) Harmony when they see numerous spits ranged about three roaring fires which serve seven or nine kinds of spits : at the large fire, the large spits and

the big joints ; at the medium-sized fire, medium-sized spits and joints ; at the little fire, little joints and little spits. This assortment furnishes some function for every age. The Cherubim look after the tiny little roasts,—Larks, Wrens and Dicky-birds—placed in rows on one side of the little fire, while the Seraphim watch rather larger spits holding Quails, Thrushes or Pigeons. Children of Secondary School age take charge of the medium-sized fire with two or three kinds of spits for poultry and medium-sized joints. Finally, those well in their teens will supervise in front of the large fire the spits holding the large joints.”

But one has to be careful before one decides how mad at times Fourier may have been. There are brilliant flashes of almost inspired truth in him, sufficient to equip a whole school of Reformers, and a mingled irony and freakish humour which suggest the now accepted philosopher, Mr. Bernard Shaw.

Such was the source of Zola's inspiration, and the story in which he gives his version of Fourier's dream is as follows :

Luke Froment, a young engineer living in Paris, is summoned to advise an old friend living in the country. This friend of his, a wealthy man, devotes his whole energy to scientific research with a view to improving the conditions of manufacture ; such questions as the conservation and transmission of heat and energy absorb his whole time and interest. The source of his wealth consists of metalliferous deposits in the hills behind his beautiful park, la Crêcherie, and a large foundry where the ore is smelted. The engineer in charge of the foundry has suddenly died, and the scientific recluse, worried at having to attend to business, sends for his friend Luke Froment to advise him and take all responsibility off his shoulders, leaving him free to drag his frail body about his beloved laboratory. Close by, on the same range of metalliferous mountains, is a large steel town, monstrous and horrible. All the brutality of life in this Inferno, fitly termed “ The Abyss,” is ruthlessly laid bare for us by Zola. Luke Froment, in the study of his friend's concerns, has also to study the industrial conditions of the Abyss, and the horror of it sinks into his soul. A passionate desire comes on him to do something to relieve this horrible condition ; but what ? He had taken up his quarters in an old dower-house or lodge standing on the edge of his friend's park. One sleepless night he throws himself out of bed, lights his lamp, and wanders about the vast bedroom : there is a bookcase in the room, he looks at it ; it is full of books on Economics and on Social Reform ; he takes up a slim little

volume giving an account of Fourier's philanthropic scheme, and as he reads it there dawns on him the conviction that the true gospel of life is his at last. The next afternoon a luncheon party at the Crêcherie consisting of the Jordans (brother and sister), Luke, and three intimates of the house, the neighbouring curé, the doctor, and the schoolmaster, drift over their coffee into a discussion on Education. Somewhat to the annoyance of the curé and the schoolmaster, Luke, brooding over his reading of the night, bursts out with his view as follows : " The fault in our schools is that we start with the idea that man is bad ; that he is born rebellious and idle, and that a whole system of punishment and rewards is necessary if we wish to get anything out of him. And so we have converted education into a sort of torture. Study has become as irksome to our brains as manual labour to our hands. Our professors have been converted into the warders of a convict university, whose duty it is to pound the intelligence of the young according to a recipe, and then run them all into the same mould without taking any account of individuality. They are no better than butchers of initiative. Under a mass of ready-made ideas and official verities, they absolutely crush the tendency towards criticism, towards research, and the development of personal and individual talent. And the worst is that, by this process, character is as profoundly affected as intelligence, and such a scheme of education can hardly produce anything but incapables and hypocrites. . . . The schoolmaster's task is none other than to awaken energy. He is, as it were, a professor of individual energy, simply charged with the duty of disengaging a child's aptitude by provoking questions from him and thus developing his personality. There is in the heart of every man an immense, an insatiable desire for learning and knowledge, and this ought to be the sole incitement to study, without any punishment or reward. Clearly it should suffice, were we to content ourselves with smoothing the way for every child to learn what he likes, and rendering a study attractive to him by letting him take it up for himself, and then progress by the force of his own ever-widening intelligence with the joy of continual discovery. That man shall make man by treating man as man, is not that the whole problem of instruction and education which we've got to solve ? "

A fine example this of Zola's sledge-hammer eloquence, so overdone as to provoke not interruption perhaps, but certainly a smile !

Sœurette, as Jordan's sister is called, listens in silence to the discussion, but drinks in every word that Luke says. Her brother sits musing, and closes

the discussion with the remark : " The one eternal truth is Work ; the world will be one day what work has made it." Then Sœurette finds words and speaks of a scheme she has been cherishing to found a sort of day-nursery for infants whose mothers are employed all day in her brother's establishment. Luke takes up the idea, develops it for her, and before many days are past has kindled all her enthusiasm for his own more spacious dreams. Together they talk Jordan out of the resolve he had come to, to rid himself for ever of the encumbrance of his mines and his foundry by selling the whole concern to the owners of the Abyss, and to devote himself undisturbed to the toy-furnaces and retorts of his laboratory. Luke's whole soul, and Sœurette's are in revolt at the thought of handing over more victims to Moloch. Jordan's colder philosophic spirit is gradually inflamed and in the end he installs his friend as controller of the whole of his property, with full power to develop it to the utmost, to build on it an industrial town which shall be all that the ideal city should be, all that the Abyss is not. Quickly he set to work, and Fourier's Utopia took visible shape. It was a garden-city indeed : this is how Zola describes it in its early days : " Luke wished that the houses of his industrial city, each surrounded by its own garden, should be comfortable dwellings where family life should flourish. There were fifty already occupying the land bordering the park of the Crêcherie, forming quite a little town stretching out to Beauclair. Every newly built house was like another step towards the conquest of the sinful old town, whose doom had been pronounced.

" In the centre of the property he had erected the People's Palace, a vast building containing the schools, a library, assembly rooms, playrooms and baths. That was all he had retained of Fourier's *phalanstère*. He allowed every man to build as he pleased, without troubling him too much with building regulations, as he saw no necessity for common action or a common type except in the case of certain public services. And then in the background rose the co-operative stores, growing larger day by day, with departments for bread, meat, and groceries, as well as for clothing, hardware, and all the little odds and ends indispensable to domestic life. There was thus corresponding to the co-operative effort regulating production at the factory, co-operative effort in distribution."

Factory and workshop in the Garden City are thus described : " After the gloom and the choking dust, and the filth of the Abyss, with its heavy, dilapidated sheds, dimly lighted by narrow windows, the sunny rooms of the

Crêcherie, built of iron and brick, with large bay windows letting in floods of light and air, seemed marvellous."

And now for the schools. Here, strung together, are some of the passages in which the school life of the children is described. "The schools were divided into three distinct sections: a day-nursery for quite little ones, where the working mothers could leave their children, even the babies in long clothes; then a school proper, with five divisions, giving a complete education; then a series of workshops, in which the pupils went through a course of industrial training designed to develop their practical skill step by step with the growth of their general intelligence in the classroom. The two sexes were not separated, boys and girls grew up together, side by side from the very cradle to the workshop. In the classroom too they sat on the same bench, associated as they would be in life."

First, we pay a visit to the day-nursery. "In a huge white room the white cradles were ranged along the white walls. Little pink faces slept in them and smiled from them. Round them, coming and going, were kind women in large spotless aprons, with soft eyes, and motherly hands, who with gentle words tended these firstlings of humanity, no more as yet than human buds as it were, the buds which were to flower into the men and women of the future. But there were also children up to three or four years of age, miniature men and women, and these moved about at large, the more delicate in wheeled chairs, the others taking their chance on their little legs, without fear of tumbling. The room opened on to a verandah filled with flowers, which led on to the garden. The whole delightful flock gambolled in the sun and the warm air. There were toys and puppets dangling on strings to amuse the babies, and the elder children had dolls, and horses, and carts which they noisily dragged about, like heroes already stirred by the call for action. It was cheering to see this little world preparing so gaily and in such comfort for the task of to-morrow."

We leave the Day Nursery by the verandah, and walk along it to visit the neighbouring school. We pass the French windows of the five classrooms, which all give on to the green garden, and as the weather is warm, the windows are wide open, so that you can look into each classroom from the threshold without going in. "Ever since the schools were instituted the teachers had been working out a new curriculum. From the first class where they received the child before he could read, to the fifth, where they parted from him after giving him all the necessary elements of general knowledge, the teachers

endeavoured above all to present objects and facts to him, to keep him in touch with the real things of the world. Their effort was also to awaken in him the desire for order, to make him methodical from daily habit. Without method there can be no effective work. It is method that puts everything in its place, and enables us to gain fresh knowledge without losing any of the store we have already accumulated. And book-learning, if not condemned, was at any rate treated as of minor importance ; for the child will only learn properly what he sees, what he can touch, what, in a word, he can find out for himself. He was stimulated of his own initiative to find out the truth, to get inside it, and make it his. The individual energy of every pupil was thereby aroused and strengthened. On the same principle all punishments and rewards were done away with, threats and cajolements were no longer relied on to force idle children to work. There is no such thing as an idle child. There are only sick children, or children who fail to understand clearly what is imperfectly explained to them, or children again whose little heads refuse to receive instruction in subjects for which they have no aptitude. If we wish to have nothing but good scholars it is enough for us to utilise the burning desire for knowledge alight in everyone's being, the child's inextinguishable curiosity in regard to all that surrounds it, that curiosity which wears us out with its questions. The moment the teacher makes instruction attractive by contenting himself with simply awakening the intelligence and merely leading it on to make its own discoveries, learning ceases to be a torment, and becomes a pleasure which grows sweeter every day. It is everyone's right and his duty to work out his own development. And the child must form himself, he must be left to do so alone in the midst of the vast world, if he is ever to become a man, an energising Force, a Will to govern and decide.

“ So the whole curriculum unfolded itself, from the first notions of things to the conception of all the truths of science in a logical and gradual emancipation of the intellect. In the garden there was a gymnasium, and there were games and physical exercises of all sorts to give the body health and strength, as the mind gained wisdom. You can only get perfect mental equilibrium in a healthy body. In the junior classes especially there were long intervals for recreation. At first the children were only given short tasks, which were frequently changed, and which were adapted to their powers of endurance. It was the rule to shut them up as little as possible. Lessons were often given in the open air ; walks were organised with the object of teaching the scholars in the midst of the very things they were learning about ;

visits to factories ; country rambles with their opportunities for the study of animals, plants, hills, and rivers. The study of men and things, of life itself, was called upon to furnish the best part of their education, for the conviction was that all knowledge should have no other aim than to enable us to live well our lives.

“ The workshops were on the other side of the garden. There were courses of instruction in the principal trades, the children trying their hands at them, not so much for the purpose of mastering them, but in order to get a general notion of all, and to determine their particular bent. The industrial training was graduated in precisely the same manner as the studies in the classroom. As soon as the child began to acquire at the desk the first notions of reading and writing, in the workshop on the other side of the garden, some simple tool was put into his hands. While in the morning he was studying grammar, arithmetic, or history, ripening his intelligence, in the afternoon he was working with his little arms, to gain muscular vigour and skill. This industrial training was, as it were, a useful recreation ; it rested the brain and put an agreeable strain on the muscles. The principle had been accepted that every man must learn a trade, so that every pupil, on leaving the schools, had only to choose the trade he fancied, and perfect himself at it in a real workshop. The cult of beauty was not neglected. The children went through courses of music, of drawing, of painting, and of modelling, which revealed the joys of existence to their awakened souls. Even for those who could not get beyond the mere elements of art, life was fuller, the earth and all things on it became articulate, and the humblest homes were glorified.”

This dream of the future is not to be dismissed as a nightmare. Much of what Zola says is marred by over-emphasis, even by gross exaggeration, some of it is mere fustian, and some of it again reads like a parody, or the *reductio ad absurdum*, of suave and sentimental pleadings of which we have more than a sufficiency in these days. It is not true, it never was true, and it never will be true, that there is “ a burning desire for knowledge alight in everyone’s being.” But no one can walk through many a school of to-day, or, in default of that, look through the photographs at the end of this volume, without feeling that there are even more things to come about in our schools than have yet been dreamt of in our philosophy. It is difficult to believe that boys and girls brought up like those to be seen at work on pages 109-217, will not have an extraordinarily different outlook from their parents.

CHAPTER VI.

PLAIN FACTS.

LIVERPOOL is a city with a population, according to the census of 1911, of 746,421. The total number on the rolls of elementary schools for September, 1913, was 134,464, with an average attendance of 121,037.

It may be claimed that some sort of manual work in school, in addition to the manipulation of pen and pencil, is now provided for well over 75 per cent. of these children. The manual work provided may be arranged in three categories: (1) Work done in special workshops or centres, for which a special grant is paid by the Board of Education. (2) Light woodwork or light metal work, which may be executed in a special workshop or room reserved for the purpose, or in the ordinary classroom. For a certain amount of this kind of manual work a special grant is also paid by the Board. (3) The varied occupations carried on in the ordinary classroom without any special equipment, (*a*) in illustration of the general subjects of the curriculum, or, (*b*) in the case of girls, and some boys, for their direct utility, *e.g.* knitting and sewing, or (*c*) for the sake of fun, to put a valuable consideration in the briefest possible form. A few words may be said about the kinds of hand-work comprehended under each of these paragraphs.

We shall take for convenience' sake boys first.

With regard then to the boys and their work in category number (1), it should be stated at the outset that in Liverpool no set scheme is prescribed. The only direct lead given from headquarters will be found in the Notes set out at the beginning of Appendix II. The schemes set out in the same Appendix, and following the Notes, will show what a rich variety has thus been secured. The heavy hand-work comprehended in category (1) is carried out in well-equipped workshops, providing for both woodwork and metal work. The former are furnished with nearly a full bench of tools; the latter with

forges, lathes, drills, vices, and the usual tinman's outfit. These workshops are either centres standing in isolation and serving from eight to ten schools, or centres established in particular school buildings and serving from two to three schools. Or, again, the workshop is part of a particular school and serves that school only. The Liverpool Education Committee have established in certain schools in suitable localities, where the workshop and the domestic centre are likely to make a special appeal, a complete equipment for both boys and girls.

For grant-earning purposes the centres or workshops are frequented by shifts of twenty or forty or sixty boys, according as the particular centre is a single, a double, or a triple centre. The grant-earning period is from two to two-and-a-half hours per week. The majority of these centres or workshops are established as well as maintained by the municipality, but it should be mentioned that in one or two of the voluntary schools an actual workshop has been provided by the managers, though it is maintained by the municipality.

Before passing from this category of hand-work, some statistics may be of interest. The boys admitted to the benefits of the centres or workshops must be over eleven. The total number of boys over eleven may be taken at twenty thousand. Of these, nine thousand had, during the last school year, their weekly turn of two or two-and-a-half hours in a fully equipped centre or workshop. This does not, of course, mean that eleven thousand were excluded from hand-work altogether. A number got their turn the year before. Others, again, will get it next year; for most of the remainder there is at least the opportunity, as will be pointed out later, of light woodwork or light metal-work, in addition, of course, to the miscellaneous occupations introduced into the ordinary classroom. But the provision of fully equipped centres and workshops is increasing rapidly, and it is quite possible that in the course of a few years the accommodation will practically equal the school population of appropriate age. The total cost of this work during the past year was, so far as regards maintenance, £5,000. A Government grant of £2,300 was received, leaving as a net cost to the rates £2,700. The number of single centres was two, of double centres thirteen, of triple centres two. Of workshops attached to schools there were twelve, the great majority of which were monopolised by the school to which the workshop was attached, and of which it thus formed an integral part.

With regard to girls, the corresponding hand-work under category (I) is

to be found in connection with cookery, laundry, and a course known as the Combined Domestic Subjects Course. As in the case of the boys' workshops, so the girls' domestic centres consist of (a) independent centres, either for cookery alone or for laundry work alone, or with both cookery and laundry rooms in the same building, each centre being fed by from eight to ten schools. In addition, however, to the centres there are (b) cookery rooms and laundries attached to particular schools, and either serving one or two schools or monopolised by the school of whose buildings they form part. Furthermore, there are (c) special centres for combined domestic subjects.

As the cookery and laundry work has to be carried out under very strict Government regulations if it is to earn a grant at all, the syllabuses for cookery and laundry, to be found in Appendix I., will be found to be far more precise than the syllabuses of hand-work for boys. But they will probably strike people as reasonable enough in themselves, and not, as is the danger with set schemes, too formal and methodical. The cookery courses comprise three stages, with an alternative preliminary stage for schools in poor localities where girls have little or no knowledge of the simplest utensils for cooking. Only two of these stages are taken by any particular girl in a single school year ; and the same is the case with the shorter laundry courses, also with their three stages, each about half as long as the cookery stage, only two of which are taken by one girl in any particular school year.

Of recent years a very useful variation of this training has been introduced, namely, the Combined Domestic Subjects Course, comprising cookery, laundry work, and housewifery. A girl can take this combined course after she has passed through Stage I. in both cookery and laundry work, and to enable the girls to reap the admitted advantage of a concentrated course each set spends a month on end in the centre. The instruction is probably more homelike and practical in connection with the Combined Domestic Subjects Course than with the more formal cookery and laundry courses, especially in those centres where teachers are actually in residence and the pupils undertake the whole work of the house. The cookery becomes more distinctively household or cottage cookery, and the laundry work may almost be dignified by the term washing ; in addition there is the invaluable practice under skilled instruction in all the sweeping, scrubbing, polishing, and wiping that goes to make the decent home, and above all the inculcation in practice of the rules of hygiene.

The centres or school courses are attended by shifts of at most eighteen

girls at a time, and the minimum grant-earning period is two-and-a-half hours weekly. There are twenty-three cookery centres, ten laundry centres, five double centres providing both for cookery and laundry, sixteen school centres for cookery and four school centres for laundry. There are seven special centres for combined domestic subjects. The number of girls who, during the last school year, received at least one course in one of these centres was thirteen thousand, out of a total of twenty thousand girls over eleven years of age.

It would appear that in regard to manual work the Liverpool Education Committee, consisting mainly of men, has been a good deal more generous to girls than to boys. As a matter of fact, practically all girls receive some specialised instruction in cookery, laundry, and housewifery before they leave school, in addition to all the instruction they get in connection with the ordinary subjects of the curriculum in the classroom—needlework, including the drafting and cutting out of clothes, the use of the sewing machine, hygiene, and the care of infants. The cost of the specialised instruction for the last school year was £4000, against which a relatively higher Government grant was received than in the case of handicrafts for boys, amounting to £2800, while £400 was realised by the sale of food, thus leaving a net cost to the rates of only about £800.

With regard now to hand-work that may be included in category (2), this takes the form in the case of boys—and also in an increasing number of schools in the case of girls—of courses in light woodwork and light metal work. The equipment for woodwork is such as not to require a special bench, but can be adapted to the ordinary classroom if a movable top is fitted on the sloping desk; the tools are light tools such as are required for working thin wood. The equipment for the light metal work course practically amounts to a simplified tinsmith's outfit.

There is no need, perhaps, to lay more stress on the light metal work and woodwork courses, for a specimen syllabus will be found in Appendix II., *B*. But a word should be said of one particular development of work on the girls' side, which may very properly be placed in this category, though it is not yet recognised by the Government by way of grant. This is the practical instruction that is being given as a crown to the classroom course in domestic science and hygiene, which will be found set out in Appendix I., viz. the course of instruction in Care of Infants and Young Children. This is a course which has been attacked with particular enthusiasm by the Committee's Inspec-

tresses and Headmistresses generally. Their enthusiasm is a striking illustration of the growth of interest in the physical well-being, not only of the rising but also of all future generations. And one may indulge the belief that when instruction of this sort becomes universal in our elementary schools successive generations will not only be healthier in themselves but also have a more wholesome outlook on life. As is only right, special pains are now being taken to secure that boys as well as girls shall receive instruction in hygiene, though no boy has as yet been initiated into the mysteries of bathing even a doll. The illustrations given in Appendix III., pages 124-126, will give a graphic presentation of this valuable form of hand-work in schools.

With regard to hand-work coming within the third category, not much need be said. The illustrations in Appendix III. may be allowed to speak for themselves. Hand-work is employed to illustrate number, geometry, history, geography, nature study, experimental science; moreover, where it does not fulfil any one of these purposes in particular it will be found to be there for the sake of the moral value attaching to all useful work, or for the almost equally valuable purpose of giving fun: fun to the big boys who make an amusing toy or model, and fun to the infants to whom many of the toys and models are passed on. The whole of the letterpress of this book has been in the main an argument for the introduction universally of hand-work of this simple kind.

Special attention may be directed to the schemes set out in Appendix II., *B*. There the variety will strike people, but the reader must be warned that the most elaborate scheme on paper is not necessarily the most elaborate and varied in practice. Good work is none the worse for being set out fully and clearly in a syllabus, but the convenience of the syllabus to the inspector, or anyone having the administrative charge of work, must not blind one to the fact that the work and not the syllabus is the real concern. As a matter of fact, at the present moment the most interesting of the seven schools whose syllabuses or schemes are set out in Appendix II. is, perhaps, the one whose scheme on paper appears the least adequate, the flimsiest of all. But note in each scheme how moderate is the allowance of time devoted to hand-work. Some impetuous critic may have had an uneasy feeling as he has perused the argument of the book or looked through the photographs, that this sort of work is all that the schools are doing. It is not so. All the time reading, writing, and arithmetic, history, geography, elementary science and the rest are still going on, but a new interest is being given to them all, both as they

affect teacher and pupil, as opportunity is afforded for realising them in the concrete.

Appended is a list of manual occupations now going on in Liverpool schools. The majority of the occupations will be found in a large number of schools, but a few have been adopted only in two or three departments, where there is a teacher specially gifted in a particular line. This is the case notably with the lino-cutting (see illustrations, page 120). This is only going on in one school, and is not the sort of occupation one would encourage any teacher to take up who had not the artistic gifts of the individual who has introduced it. So, too, with the use of the spinning-wheel shown on page 142. This has been prompted by the enthusiasm of a member of the Ruskin Society. Wireless telegraphy again (page 206) is as yet only practised in one Elementary school. The miniature rifle shooting, of which illustrations are given on pages 216-217, is an enterprise not recognised by the Board of Education, and is carried on outside school hours with the assistance of private funds.

Forms of hand-work to be found in Liverpool schools.

Paper : (1) Cutting, folding, mounting, model-making.	Toy-making. Chip-carving.
(2) Free cutting with the scissors.	Marquetry.
Cardboard : Model-making.	Knitting, sewing, and clothes mending (for boys).
Clay, putty, and wax : Modelling.	Cookery (for boys).
Sand-building.	„ (for girls).
Flower-making.	Laundry-work.
Bookbinding.	Housewifery.
Beadwork.	Needlework, for girls.
Weaving in raffia, cane, and string.	Dressmaking.
Rug-making.	Shoemaking and cobbling.
Netting, knotting, and plaiting.	Tailoring.
Upholstery .	Bent iron and other metal work.
Linoleum cutting and printing.	Gardening (in a few schools favourably situated).
Glass work : Making scientific apparatus.	Spinning and weaving.
Repoussé (metal) work.	Alabaster and other stone work.
Woodwork (with knife).	
„ (with fretsaw).	
„ (with carpenter's tools).	

In conclusion, a word of tribute is due to the teachers. The handicraft and domestic centres are staffed by instructors who have been through a definite course of training, and have earned diplomas recognised by the Board of Education as qualifying them to give special instruction. But the bulk of the work, both the light woodwork and the general manual work in the classroom, is being taken by class-teachers, who, not content with having earned the recognised teacher's certificate, have qualified themselves by summer courses and by winter evening courses to combine hand-work with head-work in the training of their youthful charges. If we are to congratulate ourselves on the progress of this practical side of education let theirs be the credit, as theirs has been the labour.

APPENDIX I.

SUGGESTIONS FOR COURSES OF INSTRUCTION IN HYGIENE, HOUSEHOLD SCIENCE, AND THE CARE OF INFANTS, WITH SYLLABUSES OF COOKERY AND LAUNDRY WORK, FOR GIRLS IN PUBLIC ELEMENTARY SCHOOLS.

A.

HYGIENE AND HOUSEHOLD SCIENCE.

SUGGESTIONS for more directly associating the Teaching of Household Science (Domestic Economy) in the Elementary Schools with the Practical Teaching given to older girls in the Centres by the Teachers of Domestic Subjects.

SECTIONS A AND B (STANDARDS I. AND II.).

1. Simple rules of health inculcated practically, through the usual daily routine inspection of hands, nails, teeth, skin, hair, etc.

2. How to use the tooth brush. How to use the nail brush. How to wash oneself in the morning. Why we wash our hands before eating food.

3. Why children should go to bed early. Why "breathing exercises" are practised either in the playground or in a room with open windows. Why we should breathe through the nose, and *not* through the mouth. Why a proper and frequent use of the handkerchief helps to keep the throat healthy. Reasons why we should not go about with our mouths half open, sit awkwardly at desks, hold reading books too close to the eyes, stoop over copybooks when writing, slouch along in the streets, instead of walking smartly, or loll about in a lazy fashion at any time.

4. How little boys and girls can help their mothers in the home. Duty of taking care of clothing. Manners of children in the home, in the school, in the playground, in the street.

5. Observation or object lessons on articles that can be bought at the grocer's, and at the baker's, and their use.

SECTIONS C AND D (STANDARDS III. AND IV.).

1. Very simple lessons on the value of fresh air, sunshine, exercise, good food and sufficient sleep.

2. How to "mind" little children—what to do, what not to do. How to amuse

little ones. Dangers of swinging by the arms, jumping violently, etc. Dangerous playthings to be avoided (needles, pins, broken glass, sharp wood, knives, scissors, peas, beans, money, buttons, matches). Dangers arising from fires, boiling water, traffic, stray cats and dogs, sitting on stone or wet steps, playing near a grid or heap of rubbish.

(*N.B.*—This instruction is most essential in districts where from various causes the care of the youngest members of a family is delegated almost entirely to older brothers and sisters, often little more than babies themselves. Cases of preventable accidents to little children are continually being commented upon in the Coroner's Court, and a habit of thoughtfulness cannot be begun too early.)

3. Observation or object lessons on (*a*) articles bought at the grocer's, and their use; (*b*) utensils and furniture found in the kitchen; (*c*) in the sitting-room; (*d*) in the bedroom, care of same and duty of care of property generally, especially that of other people; (*e*) simple lessons on coal, water, air, cold and heat.

4. (*a*) How we get heat to warm houses and schools; (*b*) Uses of food and clothing.

5. How to lay a dinner-table. How to lay a tea-table.

6. The life history of the domestic fly.

SECTION E (STANDARD V.).

This is the stage at which instruction in cookery usually begins, and it is essential that the Domestic Economy taught in the schools should correlate with the work done in the Centres, so that the pupils may have clear and accurate ideas to correspond with terms necessarily in use such as albumen, fibrine, carbon, etc. It is a distinct advantage if the lessons on food and food-values can be given by a teacher with at least an elementary knowledge of chemistry, as simple experiments and accurate diagrams are essential to a right understanding of the composition and dietetic value of foods.

1. Food, its sources, uses, and functions.

2. Carbon, oxygen, hydrogen, and nitrogen (very simple explanations).

3. Warmth-giving or force-producing food stuffs:—Fat, starch, sugar.

4. Flesh-forming or tissue-producing food stuffs:—Albumen, gluten, fibrine, casein, legumen, and gelatine.

(It should be impressed that all foods are either force-producers or tissue-producers, or both. There is no strict limiting line between the two.)

5. Water as a food.

6. Salt and other mineral foods.

7. Proximate composition of milk, meat, bread, potatoes, and eggs.

8. Suitable food for infants, for little children, for school children, for adults (the manual worker and the sedentary worker), for invalids and the aged.

9. Reasons for and methods of cooking food; relative economy of the processes

THE THINKING HAND

of stewing, boiling, baking, and frying as methods of cooking, and economic value of peas, lentils, and oatmeal as foods.

10. Choice of foods—how to select vegetables, meat, fish; current prices in neighbourhood; weekly food bills.

11. How to make a bed. How to clean windows, boots and shoes, silver, etc.

SECTION F (STANDARD VI.).

1. The skin and cleanliness. Circulation of the blood.

2. General build of the human body (bones, muscles, joints, digestion, nerves, brain).

3. Recapitulation, in greater detail, of the general rules of health, with some reference to temperance.

4. The feeding and care of infants (see Appendix B).

5. Water supply. Wells, reservoirs. Simple methods of testing and purifying water.

6. Hard and soft water—composition and properties.

7. Revision of lessons on the various foods and food stuffs, their source and use. Value of a "mixed diet."

8. Soap, soda, washing powder, blue, starch—composition and use.

9. Composition of the air and changes produced by combustion and respiration.

10. Principles of ventilation. Why we should sleep with our windows open.

11. The Home—Choice of position, lighting, ventilation, drainage, proximity to schools and father's work, cleanliness.

12. Methods of lighting the home, and how to trim a paraffin lamp.

13. Materials used as fuel, and economy in use of same. How to build a fire.

14. House and furniture cleaning. Apparatus and materials needed.

15. *Wool*—its source, nature, and manufactured forms. *Cotton*—its source, nature, and manufactured forms. Relation of the various materials used as clothing to heat and evaporation.

SECTION G (STANDARDS VII. AND EX.).

1. The washing, clothing, feeding, and care of infants as set out in Appendix B. The use of the fire-guard and particulars as to the recent Act of Parliament with respect to carelessness to be emphasised.

2. How to make a cot for the baby out of a banana crate, or box; use of bran as a bed. Why infants should sleep alone.

3. Management of the sick-room; home nursing.

4. Common ailments of children, of adults; common accidents—how to treat each. Duty of care for the aged, the afflicted and the infirm.

5. Digestion. Rules of health as regards food and clothing (in greater detail than heretofore).

6. Common causes of disease. Infectious disease. Duty of notification to the authorities. Disinfectants and how to use them.

7. What may be done in the home to help to keep the city healthy. (Civic duty of women.)

8. Necessity for hot and cold baths. Use of public baths and wash-houses.

9. Consumption and what it is, how it is spread, open-air treatment, what people can do in their own homes to fight the disease.

10. Weekly budgets (made up by individual girls and criticised by the class) determined by wages and locality. Duty of thrift and economy in all things. Use of Post Office Savings Bank. Evils of the "credit" system. Advantages of ready-money payments.

11. Clothing—choice, good taste shown in suitability for occupation and avoidance of the tawdry and showy. How to test wearing quality of materials. Necessity for mending, brushing, folding, etc. Inferiority of ready-made underwear. A box of patterns of serge, calico, flannel, print, etc., with prices and width plainly marked, is useful for illustrating in this lesson.

12. Temperance (see scheme of Board of Education).

13. Importance of modest, becoming deportment, of cheerfulness and good temper, of self-respect, of carrying on education after leaving school, of care in choice of an occupation.

NOTE.—No attempt has been made to divide up the suggested topics into lessons. Some points mentioned are impressed incidentally throughout the child's whole school career. Others again are obviously less necessary for schools in good neighbourhoods than in neighbourhoods where the girls have to depend entirely on the school for instruction and training in even the most elementary matters of hygiene and home management.

In schools where there happens, from some cause or another, to be a number of older girls in the lower standards it has been found advantageous to group these together to form a special class with a special time-table. Extra time is given to Cookery, Laundry, Domestic Economy, Household Accounts, making, mending, and hand-work generally. The girls are found to gain in self-respect, being no longer depressed by fruitless efforts to keep pace with younger and sharper comrades; increased interest results, and the gradually improved manual dexterity strengthens their brain power. Such girls are unquestionably being better equipped for life than they would be if left to struggle hopelessly along in the ordinary classes.

B.

*SUGGESTIONS FOR A SHORT COURSE OF LESSONS ON THE
CARE OF INFANTS AND YOUNG CHILDREN.*

1. CLOTHING. Simple—very few things absolutely necessary—necessity for warmth and cleanliness—if the shawl in which the baby is wrapped is worn by the mother it should be frequently washed—dangers of tight garments—flannelette—pins—value of wool. (The girls should make up a simple outfit for use in demonstrations, and cut out paper patterns for home use.)

2. WASHING AND DRESSING. Necessity for cleanliness—action of skin—baby's skin tender, chaps easily—necessity for at least one bath daily—how to prepare a bath—a good supply of warm, clean water should be used for each child—danger of cold and draught—shock of sudden change of temperature—how to wash, dry and dress—how to support back and neck—care of head, ears, eyes, folds of skin, nose—nasal breathing—comfort of soft towels and good soap. Children should never be dried with dirty clothes or rags, or held head downwards when being washed. (If asked, a mother will sometimes bring her baby for demonstration purposes, and be very interested in what is taught.) Why dirt is dangerous to young and old—personal cleanliness a duty as a citizen—use of public baths, name of one nearest to the school—charge for warm bath, soap and towels—Liverpool's magnificent water supply. How dirt acts on the mouth—tonsils—bowels and lungs.

3. FEEDING. Why natural feeding is preferable—facts as to superior power of resistance to disease and greater chance of healthy growth and development of naturally fed infants—artificial feeding—use of cow's milk—how prepared—necessity for keeping covered in a cool place and boiling and diluting—dangers of contamination—particulars as to the cost and use of sterilised milk sold at Corporation depôts—why babies are weighed and measured—feeding bottles—dangers of long tubes—how to clean feeding bottles—dangers of giving starchy foods before they can be digested—why babies should *not* have "a bit of what we are having ourselves"—dangers of over and under-feeding—need for regularity in feeding—dangers of soothing syrups—teething powders and alcohol—ill effects of so-called comforters (malformation of mouth—displacement of growing teeth—imperfect articulation—indigestion—ulcerated mouth) mother's milk best up to end of 6 months—milk diet alone up to end of 9 months—later, fine oatmeal boiled in milk—milk thickened with baked flour and boiled—later, bread crumbs and gravy—egg lightly boiled—bread and butter, boiled milk to drink—later, teeth to be exercised—but *not* on pork, pickles, bloaters, sausages, or tough meat—use of hard crusts—biscuits—rusks. Order of development of teeth—care necessary during teething—attendance at dental hospital of children of about seven—importance of regulating second teeth. Nutritive value of bread and milk—porridge—milk puddings and bread and jam for little children—no tea required—milk instead.

4. CARE. Need for fresh air—clean surroundings—light—sunshine—(very young children should have their *heads* protected from the sun)—children are like plants—importance of regular sleep—why better for baby to sleep in a cot—baby's bed should be kept clean—how to carry a young baby—need for keeping neck, arms and legs properly covered—how flies and vermin of any kind carry infection—should be carefully kept from the baby—danger of leaving candles, lamps, matches, pails of hot or cold water near little children—precautions against dangerous playthings, such as rough pieces of wood, knives, scissors, broken bottles, forks, fires, etc.—need for fire-guards—what to do if a child is burnt, scalded, choking. Children who cannot walk should not be put down to sit on the doorstep or flags—dangers arising from older children playing with street gullies. Why a doctor should at once be consulted in case of doubt as to infectious disease—in case of running ear or abscess—or in case of obstinate diarrhœa—times of year when latter most prevalent—importance of proper diet—danger of stale fish, over-ripe fruit—value of occasional doses of simple cooling medicine in spring and summer—(liquid magnesia, liquorice powder). Treatment of sore eyes—sore heads—running ears—care of hair and nails—need for training little children in decent, cleanly, regular habits—reasons for vaccination—how cleanliness, light, warmth, fresh air, and proper feeding tend to make a baby content, happy, and thriving.

(Attention should be drawn to the handbills issued by the Medical Officer of Health *re* the feeding of infants and the treatment of diarrhœa, also practical hints given from Dr. Caton's little book *How to live*, and the girls might make a copy of the appended dietary.)

TABLE OF DIETS

FOR CHILDREN UP TO SIXTEEN—TWENTY MONTHS OF AGE.

(Useful if children cannot possibly be given the natural food.)

AGE.	MATERIALS AND QUANTITIES FOR 24 HOURS.	AMOUNT AT EACH FEED.	NUMBER OF FEEDS AND TIMES OF FEEDING.	SUMMARY OF PRECAUTIONS NEEDFUL IN FEEDING.
First two days.	6 tablespoonfuls cows' milk, half pint of water, one table-spoonful white sugar or milk sugar; or sugar water may be used instead, 1 oz. of milk sugar to a pint of water.	3 table-spoonfuls.	9 feeds, 2 a.m., 6, 8, 10, noon, 2 p.m., 4, 6, 10.	As soon as the milk has been purchased make up the mixture in column 2, boil for 20 minutes, pour into clean jug, cover with clean cloth, place jug in basin of cold water to cool milk, with ice when procurable, in basin. Pour quantity required at each feed into feeding bottle, at once replace jug in basin and cloth on jug, renewing the cold water as required.
Up to six weeks.	12 tablespoonfuls milk, 24 tablespoonfuls of water, sugar as above.	4 table-spoonfuls.	9 feeds, as above.	Precautions as above.
Up to ¹three months.	One gill and eight table-spoonfuls milk, same quantity water, same amount sugar.	8 table-spoonfuls.	7 feeds, 2 a.m., 8.30, 11, 1.30 p.m., 4, 6.30, 9.	Precautions as above.
Up to ¹six months.	1 gill and 12 table-spoonfuls of milk, 16 table-spoonfuls water, same amount sugar.	8 table-spoonfuls.	6 feeds, 3 a.m., 9, noon, 3 p.m., 6, 9.	As above.

TABLE OF DIETS (INFANTS)

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AGE.	MATERIALS AND QUANTITIES FOR 24 HOURS.	AMOUNT AT EACH FEED.	NUMBER OF FEEDS AND TIMES OF FEEDING.	SUMMARY OF PRECAUTIONS NEEDFUL IN FEEDING.
Six to 1 seven months.	Cows' milk, 1 pint to one and a half pints.	8 to 12 table- spoonfuls.	5 feeds, 6 a.m., 9.30, 1 p.m., 4.30, 8.	As above.
Seven to 1 nine months.	Same, with increased quantity.			
Nine to twelve months.	6 a.m., 12 tablespoonfuls of cows' milk boiled ; 9.30 a.m., same boiled with fine oatmeal ; 1 p.m. as at 6 a.m. ; 4.30 p.m. same boiled with bread crumbs ; 8 p.m. same as at 6 a.m.			
Up to eighteen months.	7 a.m., bread and milk, or oatmeal or hominy porridge, with plenty of milk ; 11 a.m., 12 tablespoonfuls of milk ; 1.30 p.m., bread crumbs and gravy, or a lightly boiled egg, with bread and butter soaked in the egg ; 5.30 p.m. bread and milk ; 9 p.m., milk to drink.			
Up to three years.	As the infant is able to masticate food the diet may be gradually extended. But he should not have foods difficult to digest, such as pork or tough meat. Milk is to remain the principal article of diet.			

¹These quantities should pass by gradual increase from the lower to the higher amounts, and may be increased cautiously if the infant appears to require more.

C.

COOKERY AND LAUNDRY COURSES AND REGULATIONS.

1. The cleansing of kitchen and laundry utensils must be taught systematically at the beginning of the first stage, and after every demonstration and practice lesson, and a record kept to ensure each child doing a fair and varied share. A simple drill helps to minimise disorder in the scullery work.

2. Hands and nails must be inspected before each lesson, and the girls should have their hair neatly tied back. Aprons and sleeves are to be worn by every child during practice lessons.

3. Not more than *two* children are to work at a board during practice, and each pair must prepare, cook, and dish up their own portion. In the third stage two girls are to cook a complete dinner, *unaided*, from their own previously discussed menu which must show the price of the dinner and the number of persons for whom it is intended. Every effort should be made at all stages to foster independence in work.

4. Great care must be exercised to maintain perfect order and discipline during practice lessons.

5. Every opportunity should be taken to teach economy in expenditure and in the use of materials.

6. Each child must keep a note-book. Notes should be brief, pointed, expressed as simply as possible, and bear directly on proportions, actual cooking, and food value of the material used. The teacher's regular revision of note-books will help to ensure neat and accurate work. A mark-book should also be kept, and the children encouraged to obtain the highest marks. Extreme cleanliness, good behaviour, and general intelligence should receive marks apart from those given for actual skill in cooking.

7. *Blackboard summaries must never be omitted.* They should be clear, well arranged, and sufficiently detailed to indicate the groundwork of the demonstration, and should consist chiefly of deductions made by the children themselves, and indicate general rather than particular application. "Rule of thumb" methods are to be avoided, as being unintelligent and less likely to be remembered than rules deduced from actual experiment. Teachers should be most careful to make themselves acquainted with the underlying theory of each lesson.

8. There must be no departure from the approved Time Table without previous official sanction, but teachers may at discretion substitute certain lessons from an advanced stage, if the reason for such change is entered in the log-book. In order to ensure time for the requisite preparation and the revision of note-books, teachers should be at their centres not later than 9 a.m. and 1.15 p.m.

9. The cheapest kinds of meat and fish should be used at centres in poor neighbourhoods, for which a special course is now included.

N.B.—1. Each teacher is responsible for the care of the utensils in use in her

classes, and an accurate record must be kept of articles in use and articles broken. Utensils supplied for the use of cookery and laundry classes must not be used for other purposes.

2. Cupboards must be scrubbed regularly, jars labelled, and utensils arranged in order.

3. Carron oil and linen bandages, medicated pink lint, adhesive or court plaster, and a fire blanket must be kept in every centre in a convenient place known to each child. An occasional practice in the prompt use of these will prevent fright or disaster should an accident occur.

SYLLABUS.

The syllabus is arranged to suit the seasons of the year, Stage I., January to June; Stages II. and III., August to January; though the latter may occasionally be altered at the teacher's discretion.

An average weekly wage, suitable to the occupations of the parents, should always be considered, and the girls taught how to spend such money to the best advantage.

At every class the amount cooked should be sufficient for a family of seven, and always compared with home quantities, the girls intelligently understanding that the full quantity is divided between them for practice, and to allow time for the proper cooking and serving.

In Stages II. and III. Invalid Cookery and Infant Dietary are taught in conjunction with the other foods, the idea being to impress the necessity for regularly preparing special dishes for sick people, the aged, and very young children. The cooking of vegetables should receive as much practice as possible, particularly in poor districts. Experience proves that these lessons are of great advantage, especially if taken in conjunction with the making of brown gravy. The latter is a very important item of diet for children in a poor home.

To give variety, and to allow latitude to the teacher, several dishes illustrating the same method are set out in the syllabus.

Food values and general principles should be discussed at every lesson, and simple proportions and cost given. Where the dish proposed takes a short time to prepare and a long time to cook, another dish similar in principle may be added at the teacher's discretion.

Comparisons should constantly be made between the relative cost and wholesomeness of home-made dishes and shop-cooked food, and home-made bread and baker's bread.

Every opportunity should be taken to train the powers of observation and to exercise the judgment and reasoning faculties of the children.

COOKERY.

STAGE I.

Time 2½ hours. Demonstration and Practice.

No. of Lesson	SUBJECT OF LESSON.		APPLICATION.	NOTES.
1	Scullery work.	Methodical arrangement of work. Cleaning materials used. Explanation of stove and flues—laying a fire.	Washing up. Cleaning knives, forks, tin, brass. Scrubbing boards and tables.	Rules for scullery work.
2	Baking.	Management of oven. Food value of rice—family puddings. Homely methods of measuring and weighing.	Rice pudding. Sago or tapioca pudding. Revision of scullery work.	Principles involved in baking. Proportions for milk puddings.
3	Soups.	Advantages of soup dinners; choice of ingredients; economy in time and fuel; cost.	Scotch broth or Lentil or pea soup—dry toast.	General rules for soup making. Advantages of pot-herbs.
4	Stewing.	Suitable meat; principles involved in stewing; cost of meat; food value of fresh vegetables.	Irish stew or stewed mutton and carrots. Stewed fruit. Homely measures.	Rules for stewing. Choice and cost of ingredients.
5	Boiling.	Food value of vegetables; choice and cost; various methods of cooking; necessary care in boiling green vegetables.	Boiled potatoes. Boiled carrots and turnips. Boiled cabbage.	Rules for boiling. Hints on cooking fresh vegetables.

No. of Lesson	SUBJECT OF LESSON.		APPLICATION.	NOTES.
6	Steaming and Boiling (re-vision).	Principles involved in steaming ; kind and cost of food; comparative value of steamed and boiled foods.	Fruit puddings. Roly - poly or suet dumpling.	Rules for steaming. Proportions for suet crust.
7	Roasting and Baking.	Roast and baked dinners ; cost ; suitable meats and vegetables ; batter and its uses.	Roast and baked meat and vegetables. Making of gravy.	Rules for roasting and baking. Proportions for batter.
8	Bread making.	Choice and cost of flour ; tests for yeast ; explanations of and reasons for various processes ; advantages of home-made bread ; merits of whole-meal or standard bread.	Making of white or standard bread.	General rules for bread-making. Family recipe.
9	Practice lesson. Embracing examples of each method taught—girls to criticise each other's efforts.—Special marks to be given.			
10	Re-heating and using up of scraps.	Principles involved in re-heating ; boiling of bones for gravy ; rendering of fat ; hints on seasoning ; uses of stale bread.	Brown gravy. Minced meat and hash. Dry toast. Re-heating of vegetables.	Rules for making brown gravy and re-heating meat.
11	Short crust pastry.	Food value of ingredients used ; relative value of various fats ; use of baking powder.	Baked apple dumplings. Cornish or mut-ton pasties. Fruit tarts.	Rules for pastry-making. Proportions for short crust pastry.
12	Batter making.	Ingredients and their food value ; effect of heat on eggs ; proportions used for batters ; preparation, uses and various ways of cooking batters.	Yorkshire pudding. Pancakes. Toad - in - the - hole.	Rules for making batters. Proportions for family use ; cost.
13	Action of raising agents.	Revision of bread lesson. Advantages of public bakehouses. Difference between yeast and baking powder.	Scones. Currant bread. Making baking powder.	Proportions for baking-powder. Simple recipe for scones.

No. of Lesson	SUBJECT OF LESSON.	APPLICATION.	NOTES.
14	Frying.	Use and abuse of the frying-pan ; choice and suitable foods for frying ; food value of fish.	Fried fish (herrings or other cheap fish in season). Fried eggs and bacon. Fried bread.
15	Cheap suet puddings (steamed).	Fried fish (herrings or other cheap fish in season). Fried eggs and bacon. Fried bread.	Rules for frying. Choice of fish. Food values of herrings and kippers.
16	Cheap suet puddings (steamed).	General foundation for suet puddings ; various flavourings ; food value and cost of suet. General rules for making white sauce.	Lemon, treacle, ginger and date puddings. Sweet sauce.
17	Invalid foods.	Choice, preparation and serving of food for the sick ; suitable foods and their cost ; food value of liquid foods.	Family proportions for suet-puddings and simple sauces.
18	Invalid foods.	Choice, preparation and serving of food for the sick ; suitable foods and their cost ; food value of liquid foods.	Oatmeal gruel. Beef tea. Barley water.
19	Infants' feeding.	Preparation of infants' feeding bottles ; care of milk ; evils arising from use of impure, canned and skimmed milk.	Rules for invalid cookery ; cost.
20	Infants' feeding.	Preparation of infants' feeding bottles ; care of milk ; evils arising from use of impure, canned and skimmed milk.	Choice, preparation and serving of food.
21	Inexpensive cakes.	Choice, preparation and cost of ingredients ; uses of sour and buttermilk.	Soda cakes. Gingerbread. Rock cakes.
22	Examination of individual work in theory and practice.		
23	Correction of general errors revealed in previous examination. Discussion of marks gained during the term and in the examination.		

STAGE II.

Time 2½ hours. Demonstration and Practice.

No. of Lesson	SUBJECT OF LESSON.	APPLICATION.	NOTES.	
1	<p>(a) Revision of primary methods and principles.</p> <p>(b) Functions of food.</p>	<p>Comparison between nutritive qualities of food.</p> <p>Broad outline of foods suitable for various seasons.</p>	<p>Fried steaks or fillets of fish—various coatings. (Deep frying not to be taught in poor neighbourhoods.)</p> <p>Mashed potatoes.</p>	<p>Broad outline of the functions of food.</p>
2	Summer foods.	<p>Suitable foods ; cost ; how to preserve food in hot weather.</p>	<p>Stewed fruits.</p> <p>Custards (egg and with egg powder).</p> <p>Lemonade.</p>	<p>Eggs and their food value—various ways of cooking.</p> <p>Summer drinks.</p>
3	Vegetables and sauces.	<p>Mineral foods. Fresh vegetables, their medicinal and nutritive value, particularly in hot weather. Food value of sauces.</p>	<p>Boiled green vegetables ; e.g. cauliflowers, peas, marrows.</p> <p>White sauce.</p>	<p>Food value of vegetables.</p> <p>Proportions of ingredients for white sauce.</p>
4	Stewing (nitrogenous foods).	<p>Nitrogenous foods ; functions ; sources ; action of heat. Food value of "pulses."</p>	<p>Stewed mutton or veal with peas or carrots.</p> <p>Fruit or roly-poly pudding.</p>	<p>Nitrogenous foods ; their uses ; methods of cooking.</p>
5	Steaming and Baking (non-nitrogenous foods).	<p>Functions of non-nitrogenous foods. Simple explanation of digestion.</p>	<p>Steamed beef-steak pudding.</p> <p>Milk puddings with eggs.</p>	<p>Non-nitrogenous foods ; uses ; methods of cooking.</p>
6	Mixed diet.	<p>Revision of previous lessons.</p> <p>Effects of improper feeding.</p>	<p>Three dinners to be chosen and arranged by the girls with respect to cost, quantities and number for whom cooked : work to be equally divided, and a complete dinner served at each table.</p>	

No. of Lesson	SUBJECT OF LESSON.	APPLICATION.	NOTES.	
7	Bread making and babies' food.	Food values of various flours. Principles underlying successful bread making.	Brown and white bread. Soda scones. Baked flour (in preparation for babies' food).	Choice, cost and food values of ingredients. Rules for making and baking. Advantages of home-made bread.
8	Pastry making ((a) flaky and (b) with hot water).	Revision of rules for making short crust pastry; various shortening agents. Principles involved in making and baking pastry.	Sausage rolls. Mutton pies.	Rules for making flaky and hot water pastry.
9	(a) Preservation of foods. (b) Cooking of preserved foods. Foods for invalids and babies.	Principles involved in preserving food. Comparative value of preserved and fresh foods.	Boiled bacon, pickled pork or spare ribs with haricot beans. Steamed fish. " Pobs."	Advantages of preserved foods. Reasons for giving invalids fresh foods.
10	Roasting, Baking and Steaming.	Rules for cooking colonial and chilled meat; cost of suitable joints.	Roast mutton or pork. Onion or apple sauce. Lemon, fig or sultana pudding.	Rules for choosing and cooking colonial and chilled meat.
11	Grilling.	Revision of previous lesson. Foods suitable for grilling; cost. Food values of eggs and milk.	Grilled meat or fish. Yorkshire pudding or pan-cakes.	Rules for grilling; choice and cost of foods. Advantages and disadvantages of grilling.
12	Frying (revision).	Difference between "wet" and "dry" frying. Use and abuse of the frying pan. Necessary care of fat in dripping jar.	Fish cakes or rissoles. Chipped potatoes.	Advantages and disadvantages of frying. Cost and care of bath of fat.

No. of Lesson	SUBJECT OF LESSON.		APPLICATION.	NOTES.
13	Stock and Soups.	Principles involved in stock and soup making. Choice, cost and preparation of ingredients. Economy of keeping a stock pot.	Stock. Tomato soup (with stock). Potato soup (without stock).	General rules for stock and soup making. Food value of soup.
14	Re-heating.	Economy in the pantry ; the making from scraps, of nourishing and appetising dishes. Food value of rice.	Curried meat or fish with boiled rice. Potted meat or fish. Cold meat sausages or fried vegetables.	Rules for re-heating. Food value of rice ; cost.
15	Individual test in practical work, each girl taking entire responsibility of her own dish, knowing cost, recipe and time required for cooking.			
16	Christmas fare.	The choosing of fruits, cost, care in storing ; value of lemon juice and spices in preserving mincemeat.	Mincemeat. Mince pies. Lemon cheese mixture.	Recipes for home use ; cost. Food values of ingredients.
17	Cake making (rich and plain).	Choice, preparation and cost of ingredients ; care required in the making and baking of cakes.	Plum, sultana or seed cakes. Victoria buns.	Family recipes. Advantages of home-made cakes ; cost.
18	Oven dinners.	Economy in time, preparation and cost. Suitability of such dinners for washing day and during Spring cleaning.	Meat or potato pie (with pastry) or Hot Pot. Rice or bread pudding.	List of cheap and easily prepared dinners. Family quantities and cost.
19	Examination of individual work in theory and practice.			
20	Correction of errors in previous lesson. Results of marks.			

THE THINKING HAND

STAGE III.

Time 2½ hours. Demonstration and Practice.

No. of Lesson	SUBJECT OF LESSON.		APPLICATION.	NOTES.
1	<p>Expenditure of income. Amount allowed for food. The making up of weekly budgets.</p>	<p>Brief summary of necessary household expenses—rent, coal, gas. Deduction of probable cost of food; hints on true and false economy.</p>	<p>Stewed mutton or lamb. Green peas. Fruit pie.</p>	<p>Expenditure of income. Advantage of buying dry stores in bulk.</p>
2	<p>Dietary value of fresh vegetables and eggs.</p>	<p>Care necessary in cleansing and drying vegetables for salad; food value of fresh vegetables; reasons for use of salad dressing or oil.</p>	<p>Fruit and vegetable salads. Salad dressing. Economic trifles.</p>	<p>Principles underlying salad making. Ingredients and their cost.</p>
3	<p>Summer dinners—instructions as to drawing up of menus. Special attention to food for the aged and for young people. Use and abuse of tinned food.</p>	<p>Necessity for forethought in housekeeping. Reasons why old people and young children must be considered. Digestibility of fish. Comparison of canned with fresh foods as to food values, cost, convenience, etc. Evils resulting from feeding infants on condensed, skimmed milk.</p>	<p>Fried fish or pies made with tinned meat or fish. Mashed potatoes. Lemon pudding, ginger pudding or tarts made with canned fruit.</p>	<p>Principles underlying the selection of summer foods. How to preserve milk in hot weather.</p>
4	<p>Importance of a well-balanced diet.</p>	<p>Discussion on the various food stuffs in the dinner to be prepared; reasons for variety. Choice of puddings.</p>	<p>Roast mutton. Mint or onion sauce. Boiled potatoes. Milk pudding.</p>	<p>Hints on suitable combinations of foods; examples.</p>
5	<p>Criticism of girls' menus.</p>	<p>Family quantities. Suitability of combination of meat, vegetables and pudding. Home utensils and facilities.</p>	<p>Hot-pot. Stewed fruit.</p>	<p>A week's dinners—(a) Summer; (b) Winter.</p>
6	<p>Portable dinners.</p>	<p>Reasons for providing lunch for those unable to come home; relative values of home-prepared and shop meals.</p>	<p>Meat pies. Cornish pasties. Potted foods (meat, fish, brawn).</p>	<p>Advantages of home preparations and cost.</p>

No. of Lesson	SUBJECT OF LESSON.	APPLICATION.	NOTES.
7	The making of Jams and Pickles.	Jam (best fruit obtainable). Pickled onions, cabbage or walnuts.	General rules for (a) buying, (b) preparing, (c) cooking, (d) pottling; cost.
8	Bread making.	Brown bread. Currant bread. Tea cakes.	Memorising of notes.
9	All practice lesson.—Dishes to be large enough, if possible, to suit a small family.		
10	Use and care of the larder, cupboards, meat safe or covers.	Grilled meat or fish. Clarifying fat. Custards in pastry.	Use and care of larder, cupboards, etc. Storing of food for long or short periods.
11	Re-heating —the using up of scraps.	Fish cakes or rissoles. Mince and toast. Roly-poly or fruit puddings.	Reasons for use of sauces and seasonings in re-heating. Memorising notes on re-heating—brown gravy—pastry.
12	Fish, classes, methods of cooking.	Boiled and steamed fish. Melted butter. Swiss apple or Queen of puddings.	Choice of fish. Comparative values of various kinds.
13	Vegetarian diet.	Tomato, lentil or haricot soup. Stewed prunes. Cup custard.	Advantages and disadvantages of vegetarian diet; cost.

No. of Lesson	SUBJECT OF LESSON.	APPLICATION.	NOTES.
14	Winter foods. Invalid diet. Care of infants' feeding bottles (revision).	Beefsteak pudding. Boiled potatoes. Barley water and cleansing of infants' feeding bottles.	Principles underlying the selection of winter foods.
15	Care of the stock pot. Invalid foods (revision).	Stock. Soup. Milk pudding. Gruel.	Principles involved in stock making; choice, preparation and cost of ingredients.
16	Baking and Frying (pork).	Fried fillets with sage and onions, or Imitation goose and apple sauce. Baked potatoes.	Hints on choosing and cooking pork. Family joints or parts and cost.
17	Cake making.	Family fruit cakes (suitable to class). Sponge cake mixture.	Principles involved in making and baking cakes. Family recipes and cost.
18	Marmalade making.	Marmalade. Remainder of time to be spent in discussion of infant feeding.	Recipe for family quantity—cost. General rules for making preserves.
19	Christmas fare.	Mincemeat. Mince pies or Eccles cakes.	Family recipes and cost. Advantages of steaming Christmas puddings.
20	Occasional dishes for breakfast or supper.	Poached egg on toast. Welsh rarebit. Porridge. Making tea, coffee and cocoa.	Hints on breakfast and supper dishes (<i>a</i>) for children, (<i>b</i>) for adults—cost.

ALTERNATIVE (COOKERY) SYLLABUS FOR SCHOOLS IN POOR DISTRICTS.

The aim here is to teach the making of a good nourishing meal at a small cost, the nutritive value of which should be emphasised and frequently contrasted with that of a meal of tea and bread.

Practical work is the essential; only the most elementary theory should be taken. Dishes involving the use of the simplest utensils, the cooking of two dishes in one utensil, economy in the use of fuel, how a parlour fire can be utilised, and time required under varying conditions, must all be carefully demonstrated.

The preparation and cooking of chilled meat should receive special attention.

Gruel, barley water, and infant feeding should be taken with the ordinary dishes to impress the fact that special foods must be prepared daily for the sick, the aged, and very young children.

The nutritive value of oatmeal, wholemeal flour, peas, beans, rice, barley, and hominy, and their comparative cheapness, need to be repeatedly impressed.

The very limited accommodation and the scarcity of utensils in the homes of the poor lead to the excessive use of the frying pan. To counteract this tendency there is in this scheme a repetition of stewing—a method which has many advantages over frying.

The children should be encouraged to speak of the necessary, weekly, home expenses, and exercised in making budgets to fit the varying families and wages.

This course is suitable for the many boys who do all, or at any rate a share, of the household work in the absence of the parents.

A variety of dishes is given, and the teacher may use her discretion as to whether more than one is advisable in each method.

ALTERNATE SCHEME OF COOKERY FOR SCHOOLS IN POOR NEIGHBOURHOODS.

Time 2½ hours. Demonstration and Practice.

No. of Lesson	SUBJECT OF LESSON.	APPLICATION.	NOTES.	
1	Scullery work.	Kitchen utensils—their cost and care; uses of soda, sand and whiting.	Washing up of plates and dishes after dinner. Cleaning knives and forks. Cleaning brass, tin, steel, etc.	Sorting and washing dishes. Names and uses of various cleaning materials.
2	Soups.	Advantages of soup dinners; economy in fuel and time; suitable vegetables.	Pea or lentil soup. Sheep's head or Scotch broth.	Ingredients; cost; time required for cooking; food value of soups.
3	Stewing.	Suitable meat and vegetables; cost; quantities for family meal.	Irish stew or stewed mutton and rice. Gruel.	Simple recipe and rules for stewing. Proportions for gruel.
4	Boiling (salt meats).	Food value of meat or fish; cost.	Spare ribs, bacon or salt fish. Boiled cabbage or potatoes.	Advantages and disadvantages of salt meats.
5	Baking.	Dinners for healthy and sick people.	Ordinary or vegetable hot-pot. Beef tea.	Simple rules for baking. Cost and quantities for family dinners. Proportions for beef tea.
6	The making of brown gravy.	Economy of stewing bones and scraps for good gravy. Food value of vegetables.	Brown gravy. Boiled potatoes, or Boiled peas or beans.	Recipe for brown gravy. Hints on cooking pulse foods.

No. of Lesson	SUBJECT OF LESSON.	APPLICATION.	NOTES.	
7	Stewing (revision).	Revision of Lesson 3. Food values of barley and rice.	Stewed pieces of meat. Stewed giblets with rice or barley.	Family quantities and cost. Food value of rice and barley.
8	Bread making.	Kinds of flour ; cost ; necessity for good yeast ; care in preparation and baking ; advantages of bake-houses.	Standard bread. Currant bread. Barley water.	Simple home recipes. Rules for bread making. Proportions for barley water.
9	Infant feeding. Cleansing of babies' feeding bottles.	Care of milk ; evils arising from impure and canned skimmed milk. Various types of feeding bottles.	Sterilised and humanised milk. Baked flour (not to be used until a child's teeth appear).	Choice, preparation and serving of food.
10	(a) Foods for young children. (b) Baking and boiling. (c) Milk puddings.	Revision of main points in infant feeding ; value of skimmed milk ; food value of rice, etc.	Rice, sago or tapioca pudding. Bread pudding (with currants or raisins).	General proportions for milk puddings ; cost.
11	Stewing.	Food values of meat and vegetables ; revision of previous lessons on stewing. Reference to invalid foods.	Stewed ox-cheek or shin of beef with vegetables. Gruel.	Family quantities and cost. Hints on foods for the sick.
12	Methods of using up scraps and revision of infant feeding.	Value of hot food over cold ; care of the dripping jar. Age at which starchy food may be given to infants.	Re-heated meat or fish. Fried potatoes. " Pobs."	Rules for re-heating. Hints on making " Pobs."
13	Stewing.	How to choose tripe, liver, etc. Food value of tripe and milk. Cost of cow-heel.	Stewed tripe and onions, or Stewed cow-heel.	Food value and digestibility of tripe and cow-heel.
14	Frying.	Use and abuse of the frying pan ; suitable foods for frying ; cost.	Fried fish (cheap fish in season). Fried bacon and eggs. Fried soaked bread.	Advantages and disadvantages of frying. Food value of herrings and cost.

No. of Lesson	SUBJECT OF LESSON.		APPLICATION.	NOTES.
15	Boiling.	Food value of fresh fish—choice and cost; special reference to aged, young and sick people.	Boiled fish (cheap fish in season). Parsley sauce. Rice pudding.	Hints on foods for aged, young, and sick people; cost.
16	Roasting and Baking.	Comparative cost of roasting and baking; suitable joints. Hints on preparation of colonial and chilled meats.	Roast or baked breast of mutton and potatoes or roast pork. Boiled cabbage.	Simple rules for roasting and baking. Suitable joints and cost.
17	Stewing and Boiling.	Revision of stewing. Food value of suet pastry. Choice and cost of fresh fruits.	Sea-pie or stewed meat and dumplings. Stewed fruit.	Proportions for suet crust; its various uses and cost.
18	Baking.	Uses of sour and buttermilk, carbonate of soda and baking powder. Advantages of small cakes which can be baked <i>over</i> a small fire.	Soda scones. Potato cakes. Fritters—(stale bread soaked in milk and fried in dripping; batter made from egg powder).	Simple recipes for home use.
19	Examination of individual work in theory and practice.			
20	Correction of general errors in theory and practice and discussion on the marks gained during the term and in examination.			

SPECIAL COOKERY COURSE FOR
JEWISH CHILDREN.

Time 2½ hours Demonstration and Practice.

No. of Lesson	SUBJECT OF LESSON.	APPLICATION.	NOTES.	
1	Scullery work.	Cleaning of kitchen utensils ; their cost. Explanation of ovens and flues. Various cleaning materials in daily use.	Cleaning of tins, spoons, knives and forks. Scrubbing pastry boards and rolling pins.	Rules for using various cleaning materials. Rules for scrubbing.
2	Boiling.	Food value of fresh vegetables ; difference between root and green vegetables. Comparison between Jewish and other methods of cooking and serving. Cost.	Boiled potatoes. Boiled cabbage. Boiled beetroot, carrots or turnips.	General rules for boiling vegetables.
3	Stewing.	Difference between "kosher" and other meat—reasons. Dietary laws of Jews. Advantage of putting vegetables with meat. Cost of meat, vegetables and fruit.	Stewed meat and vegetables. Stewed fruit.	Rules for stewing.
4	Roasting and Baking.	Advantages and disadvantages of methods ; suitable kinds of meat and joints ; cost ; economy in fuel. Special attention to laying table and serving food.	Roast and baked meat. Baked potatoes. Boiled greens.	Rules for roasting. Cost of family dinner.
5	Boiling and Baking (milk puddings).	Food value of milk and starchy grains ; reasons for slow cooking ; heat of the oven ; cost.	Rice puddings—boiled and baked. Measures and weights.	General rules for making milk puddings. General proportions for milk puddings.

No. of Lesson	SUBJECT OF LESSON.	APPLICATION.	NOTES.	
6	Pastry (Short crust).	Proportions of oil and flour. Revision of dietary laws with regard to meat and butter or milk. Food value of oil. Cost.	Meat and potato pasties. Fruit tarts. Jam tarts.	Rules for making pastry (short crust).
7	Soups.	Food value of liquids; digestibility of soup; stock and its uses; uses of starchy foods; macaroni, rice, sago, etc. Revision of short crust pastry.	Macaroni or lentil soup. Fruit or jam tart.	Rules for soup making.
8	Baking and Steaming (pastry with rendered fat).	Difference between "kosher" and other kinds of suet; reasons for rendering; value of suet as food. Advantages of steamed puddings; difference in digestibility of baked and steamed puddings.	Roly-poly pudding (baked). Fruit puddings (steamed).	Rules for making suet pastry.
9	Frying.	Various oils and fats used; classes of fish allowed; advantages of cooking in oil; deep and shallow frying; cost.	Fried fish. Chipped potatoes.	Rules for frying.
10	Batter making.	Food value of eggs and milk. Revision of rules for frying. Reason why such foods must be eaten as soon as cooked; cost.	Yorkshire pudding. Pancakes. Fritters.	Rules for making batter.
11	Re-heating.	Reasons why Jews rarely have re-heated meat and fish; how to make it digestible and appetising; uses of herbs and sauces; eggs with mashed potatoes; cost.	Minced or hashed meat. Dry toast. Mashed potatoes.	Rules for re-heating.
12	All practice lesson. Dishes chosen by teacher, the girls of each of three tables dividing the work equally and cooking a small complete dinner.			

No. of Lesson	SUBJECT OF LESSON.	APPLICATION.	NOTES.	
13	Bread making.	Value of home-made bread ; difference between Jewish and other bread ; value of oil in bread, especially in large loaves in hot weather ; various kinds of flour ; heat of ovens.	White bread. Whole-meal or rye bread.	Rules for bread making. Family recipe.
14	Steaming (puddings).	Advantages of steamed over boiled puddings ; time to cook ; various flavourings ; value of eggs. General foundation for such puddings.	Ginger, lemon or treacle pudding. Fig, date or marmalade pudding.	Simple proportions. Rules for steaming.
15	Grilling.	Advantages and disadvantages ; suitable parts ; cost ; necessity for good meat and clear, red fire.	Grilled meat. Grilled fish. Baked apple dumplings.	Rules for grilling. Hints on suitable parts and cost.
16	Boiling.	Revision of fish lesson (9). Freshness of fish—food value—seasons—cost. Various garnishes for fish. Food value of prunes.	Boiled fish. Melted butter or egg sauce. Stewed prunes.	Rules for boiling. Proportions for sauces.
17	Cheap cakes.	Various fats used in cake making ; advantages of home-made cakes ; use of egg and baking powders. General rules for making ; preparation of tins—heat of oven for large and small cakes ; cost.	Jam sandwich. Queen cakes. Seed cakes.	General rules for cake-making. Simple recipes.
18	Individual test lesson in theory and practice.			
19	Correction of errors in test.			
20	Exhibition lesson, girls providing their own materials and each girl making a dish for a family.—Knowledge of time required for cooking, cost, and correct method of serving to be shown.			

LAUNDRY.

STAGE I.

Time 2½ hours. Demonstration and Practice.

No. of Lesson	SUBJECT OF LESSON.	APPLICATION.	NOTES.
1	Choice, cost and care of laundry utensils. Buying and storing of soap, soda, blue, etc. ; cost.	Lighting and managing of boiler fire. Cleaning boiler and utensils.	Choice and care of household, washing utensils.
2	Preparation for Family Wash. Introduction to simple washing methods.	Sorting of clothes. Preparation of materials. Removal of stains. Washing and finishing children's hair and neck ribbons.	Advantages of home washing. Notes on materials used and processes involved in the removal of stains.
3	Various irons—their uses and cost—storing of irons—cleaning with tallow, soap and brick-dust. Arrangement of ironing table—advantage of taping or pinning sheet. Nature and use of blue.	Washing and ironing pocket-handkerchiefs.	Rules for cleaning irons.
4	Washing, starching and finishing table linen. Making hot-water starch.	Washing and finishing table linen.	Principles involved in the washing of white clothes. Proportions for hot-water starch.
5	Water—hard and soft ; advantages of latter. Method of softening water. Processes of steeping, washing, boiling, etc. Hanging out. Care of the mangle.	Washing and drying of bed and body linen and towels.	Rules for softening water. Reasons for drying in the open air. Methods of handling heavy clothes. Reasons for keeping bed and body linen and towels clean

No. of Lesson	SUBJECT OF LESSON.	APPLICATION.	NOTES.
6	Damping, folding, mangling and ironing.	Finishing of bed and body linen and towels.	Rules for damping, mangling and ironing.
7	Starch—its source, use and cost. Borax—its source, use and cost.	Making of hot-water starch. Starching and ironing plain white pinafores and aprons.	Rules for ironing. Notes on borax.
8	Methods of preserving the colour in prints. Liability of soda and soap powders to destroy colours.	Washing prints (pinafores, aprons, etc.), drying and ironing.	Simple rules for washing and getting up prints.
9	Nature and the properties of wool. Washing flannel and other woollens—how to prevent shrinking and loss of colour.	Washing and drying of flannel and other woollen garments, <i>e.g.</i> vests, shawls, etc.	Rules for the washing of woollens and for the prevention of shrinking.
10	An all practice lesson as a test—each girl being provided with a pair of stockings to be washed and one other article to be washed and ironed, the whole making a Family Wash.		

STAGE II.

Time 2½ hours. Demonstration and Practice.

No. of Lesson	SUBJECT OF LESSON.	APPLICATION.	NOTES.
I	The washing of delicate fabrics. Stiffening agents—starch, gum, sugar. Preparation for washing curtains—shaking out of dust, mending, stitching together to prevent injury in wash. Method of stretching, drying and re-tinting lace curtains.	Washing and getting up of lace and of short muslin and lace window curtains. Re-tinting curtains.	Hints on preparation for washing curtains, re-tinting, etc.

THE THINKING HAND

No. of Lesson	SUBJECT OF LESSON.	APPLICATION.	NOTES.
2	Use and abuse of soda and powders. Value of woollen garments. Dangers of flannelette. Importance of airing children's clothes.	<i>Infants' clothing.</i> Washing, drying and ironing—airing—goffering and crimping. Why trimming on babies' garments should not be stiffened.	Hints on special care in washing and airing infants' garments, and necessity for keeping in good repair.
3	Revision—all practice lesson.	Washing and getting up of body linen.	
4	Washing and ironing collars and cuffs. Cold-water starch. Use of borax and turpentine. Advantages of home washing and ironing.	Washing, starching and ironing of collars and cuffs.	Rules for washing and ironing collars and cuffs, and for making cold-water starch.
5	Revision of above. Use of wax. Glossing of linen.	Washing and finishing collars, cuffs and fronts.	Rules for glossing.
6	Revision of lesson on getting up of table linen. Use of full and diluted starch. Further remarks on the removal of stains and the destructive power of chemicals.	Washing, starching and ironing of dresser and tray cloths, serviettes and d'oyleys. Experiments in the removal of stains.	Memory recipe for hot-water starch. Rules for finishing table linen.
7	Revision of lesson on washing of woollens, etc. Danger of flannelette—how to render it less inflammable. Care in pressing flannels.	Washing, drying and finishing an unlined blouse (woollen, muslin or flannelette), or boys' pants or girls' serge knickers.	Memory rules for washing flannels. Hints on danger of wearing flannelette garments, especially in reference to little children.
8	The washing of blankets and woven woollen underwear. Revision of the washing of woollens generally.	Washing of cot blankets, woven woollen underwear, etc.	Personal cleanliness necessary to health. Importance of underwear and bed clothes being kept clean.

No. of Lesson	SUBJECT OF LESSON.	APPLICATION.	NOTES.
9	Cleaning and renovating silk—use of gum, borax, etc.	Silks, ribbons, fancy-work, lace ties and collars.	Hints on how to renovate silk—care in washing and ironing.
10	Individual work in the form of a test—every girl washing and ironing some articles.		

STAGE III.

Time 2½ hours. Demonstration and Practice.

No. of Lesson	SUBJECT OF LESSON.	APPLICATION.	NOTES.
1	Washing and getting up of prints.	Revision—blouses, pinafores, little boys' suits, overalls, underskirts, etc.	Memory test of rules.
2	How to keep clothes a good colour. Bleaching.	Washing and getting up of collars and fronts attached, turn-down collars, etc.	Rules for bleaching. Superiority of grey calico from point of view of economy in outlay, durability and colour keeping.
3	Revision. The washing and getting up of baby clothes.	The washing of all kinds of baby clothes—cotton and woollen.	General directions and revision of previous notes on same.
4	Washing and getting up of silks. How to prevent scorching in the ironing.	Washing and getting up of silk blouses and other silk articles.	Revision of hints on renovation of silk.
5	Teaching by experiment the action of soda, powders, rubbing, boiling, hot water, etc., on "soft" colours.	Washing and getting up of men's or boys' coloured shirts.	Revision of rules for prevention of loss of colour.

No. of Lesson	SUBJECT OF LESSON.	APPLICATION.	NOTES.
6	A Family Wash. Order in which work should be done—necessity for early rising and preparation the day before.	Each girl to wash and finish a pair of stockings or one other small woollen article, and one article in white or coloured cotton or linen—the whole to form a Family Wash.	Discussion on most suitable day for this and reasons—kinds of mending most often necessary. B.B. summary to consist of results of discussion.
7	Extra washing for Spring cleaning. Choice of day. Revision of blanket washing. How to prevent loss of colour in coloured woollen articles. Use of ammonia in cleansing woollen articles.	Washing, cleaning and finishing of blankets, woollen table cloths, sofa rugs, etc.	Hints on use of ammonia and on care needed in storing blankets and otherwoollens.
8	Use of bran, salt, vinegar and size. Preservation of colour in brown holland.	Washing, starching and ironing cretonne, chintzes or holland (valences, sofa and chair covers, etc.).	Rules for washing the materials named.
9	Revision of lesson on the washing of lace and window curtains.	Washing and getting up of lace and of short muslin and lace window curtains. Re-tinting curtains.	Revision of hints on preparation for washing curtains, re-tinting, etc.
10	An all practice lesson as a test—each girl being provided with a small woollen article or a pair of stockings and one other article to be washed and got up—the whole forming a Family Wash.		

NOTE.—1. The necessity for the careful airing of clothes should be insisted upon in every lesson, and reasons given.

2. Reference should be made to the equipment and use of public wash-houses.
3. In poor districts the teacher is at liberty to accept whatever the children can bring in the way of material for practice—silk d'oyleys, serviettes, etc., are unknown articles in poor homes.

D.

SPECIMEN SCHEME OF INSTRUCTION IN COMBINED DOMESTIC SUBJECTS, INCLUDING HOUSEWIFERY.

COMBINED DOMESTIC SUBJECTS CENTRE—ARNOT STREET.

Instruction in Combined Subjects.

1. Centre to be used for girls over 12 years of age.
2. Sixteen girls to form a class.
3. Girls to have had previously at least one course of Cookery and Laundrywork.
4. Class to attend in a continuous period of five weeks (all day) for four days per week.
5. Register to be marked once only at each meeting.
6. Girls to be told duties for following week and to be encouraged to bring work from home.

Chief Points in Organisation of Work.

1. Course to be chiefly practical.
2. Demonstration to be given where teacher deems it necessary—to depend upon knowledge of various branches of work shown by girls.
3. Mornings to be devoted chiefly to usual morning work of house—marketing, housework, cooking, washing, etc., afternoons to completing morning's work, household sewing, hygiene, demonstrations on subjects of which girls have shown lack of knowledge, lectures on thrift, household accounts, physiology, and all branches of care of infants, young children, invalids, the aged, etc.—theoretical and practical in the case of infants.
4. Note-books to be kept by each girl and to record :
 - (a) Daily work performed.
 - (b) Notes of special lessons.
 - (c) Menus and budgets for varying incomes.
 - (d) " Hints "—special recipes, etc.
 - (e) Seasons of food stuffs.
 - (f) Diagrams, notes, etc.

(No set time to be arranged for copying notes, but, as opportunity arises, notes can be written up.)

5. The work of the Centre should be in accord with the home environment.
6. Economy of time and materials to be taught and practised throughout the courses.
7. Tidiness of person to be insisted upon.
8. Endeavour must be made to enlist the sympathy of parents with the instruction given at the Centre.

Notes on Syllabus.

Work planned so that in *Course I.* the girls are instructed in the principles underlying the making of a home, and *guided* in their application. Special attention must be paid to income available, and methods of economising time, labour, etc.

Course II.—Having had instruction in Course I the girls are to apply principles *more independently* in their practical work. More detailed knowledge is required, and the doing of a larger quantity of work in less time—more complicated processes to be used, and all work to be more advanced in type. If the girls in turn are placed in *entire charge* as housekeepers during this course they learn to arrange the work of a house and to supervise it in a way which enables them to take the responsibility of a home.

Course III.—More advanced work. Combination of Courses I. and II. Food values—varied diets—planning of whole week's work—spring cleaning, etc.

BRIEF OUTLINE OF SUGGESTED ARRANGEMENT OF WORK OF HOUSE.

(16 girls to work in sets of 4.)

MORNING WORK OF HOUSE. 9.30 TO 12.0.

1st set (4 girls).	(1) Marketing. (2) Cooking of dinner. (3) Cleaning of kitchen. (4) Dishing up.
2nd set (4 girls).	(1) Cleaning of bedrooms (daily), making of beds, etc. (2) Sitting room. (3) <i>Weekly</i> cleaning of one bedroom. (4) Care of plants, flowers, etc.
3rd set (4 girls).	(1) Stairs, landings. (2) Steps, front brass, hall. (3) Lavatory, cleaning basin, taps, linoleum, W.C., etc. (4) Laying of table for meal, clearing away, etc. (5) Attending to door bell, etc.
4th set (4 girls).	(1) Washing of garments and household articles necessary for use of house. (2) Ironing of smaller articles. (3) Assistance in scullery or kitchen.

AFTERNOON WORK. 1.30 TO 4.0.

From 1.30 to 2.30 or 3.0—remainder used for Practical Work based on Demonstrations.

Tuesday.	Hygiene lesson—see syllabus.
Wednesday	Demonstration in cookery, laundrywork, or housewifery.
Thursday.	Lesson on thrift, accounts, weekly budgets, etc.
Friday.	Household sewing—making and mending. Use of sewing machine. Upholstery lesson. Practical care of infants and little children. Younger children from the Infants' Department may be utilised for this lesson. Girls in turn to take sole charge—to amuse and mind one or more little children—to wash them—brush their hair—prepare food—tell stories—play games, etc. Pupils may be sent to the "baby room" in the Infants' Department for some experience in this connection—the teacher in charge giving marks for capacity shown.

COURSES OF INSTRUCTION.

COURSE I.

(1) Courses must of necessity vary according to powers of class.

(2) Economy of time, money, and labour must be taught in every connection.

HOUSEWIFERY.	COOKERY.	LAUNDRYWORK.	LESSONS.
<p>1. The house. Plan, arrangements, drainage, etc.—water supply—what to do in case of burst pipe—stop taps.</p> <p>2. The kitchen, scullery, etc. Washing up—cleaning utensils, etc. Care of sink—traps, grids, etc.—flushing.</p> <p>3. The sitting room—simple daily, weekly and spring cleaning. Care of furniture, carpets, ornaments, etc.</p> <p>4. The bedrooms. Beds—making, care of bed linen, mattresses, etc.</p> <p>5. Bathroom. Lavatory, stairs, landings. Care of bath, W.C., basin, taps, etc.</p> <p>6. Grate and stove. Cleaning and care—flues, lighting of fire, etc.</p> <p>7. The table. Laying a table, clearing away, waiting at table.</p>	<p>1. Simple dinner.</p> <p>2. Teas. Tea, coffee, and cocoa.</p> <p>3. Breakfasts.</p> <p>4. Suppers.</p> <p>5. Budgets for week, menus, etc.</p> <p>6. Marketing, cost of food.</p> <p>7. Seasons of foods.</p> <p>8. Simple chemistry of food stuffs.</p> <p>9. Food values.</p> <p>10. Mixed diets.</p> <p>11. Bread and cakes.</p> <p>12. Soups.</p> <p>13. Stews.</p> <p>14. Methods of cooking—rules.</p> <p>15. Simple jams and pickles.</p> <p>16. Choice and storage of food.</p> <p>17. Food for manual and sedentary workers.</p> <p>18. Cooking of joints, puddings, fish, etc.</p>	<p>1. Preparation for wash. Choice of day, etc. Sorting, mending, removal of stains, etc.</p> <p>2. Washing of all fabrics and articles in common use in the house.</p> <p>3. Finishing off same articles.</p> <p>4. Use of simple chemicals for bleaching, removing stains, etc.</p> <p>5. Simple disinfecting.</p> <p>6. Advantages of home washing.</p> <p>7. Mending and putting away clothes.</p>	<p>Such subjects as :</p> <p>1. The house. (a) Choice. (b) Drainage.</p> <p>2. Ventilation.</p> <p>3. Household accounts. (a) Thrift. (b) Weekly accounts. (c) Division of income.</p> <p>4. Household linen. Cost, care, etc.</p> <p>5. First aid—bandaging.</p> <p>6. Care of infants.</p> <p>7. Foods in season.</p> <p>8. Sources of Great Britain's food supplies.</p> <p>9. Selected subjects from syllabus.</p> <p>10. Chemistry of foods.</p> <p>11. Food values of common food stuffs.</p> <p>12. Economy in the house : fuel, food, time, labour.</p>

HOUSEWIFERY.	COOKERY.	LAUNDRYWORK.	LESSONS.
<p>8. Cleaning of mirrors, windows, silver, glass, brushes, paint, brass, carpets, boots, shoes, and other leather articles.</p> <p>9. Infants, children, and old people—care, feeding, clothing.</p> <p>10. Simple polishes for furniture, etc.</p> <p>11. Household sewing. Rug making. Making, mending, and renovating. Simple upholstery.</p> <p>12. Thrift. Post-office savings bank, clubs, school bank, etc.</p> <p>13. Lighting and heating. Home. Reading gas meter—care of gas.</p> <p>14. Knitting.</p>	<p>19. Using up of scraps, care of larder and meat safe.</p> <p>20. Cookery for invalids, infants, little children, and the aged.</p> <p>21. Portable dinners.</p> <p>22. Daintiness in dishing up—garnishes, etc.</p> <p>23. Salads.</p>		<p>13. Patent medicines. Uses and abuses.</p> <p>14. The home medicine chest. <i>(a)</i> making of caron oil. <i>(b)</i> Boracic ointment, etc. <i>(c)</i> Old linen pillow cases, etc., for bandages.</p> <p>15. Temperance.</p>

COURSE II.

1. More independent practical application of 1st Course instruction to work of house—more advanced cookery, laundrywork, etc.—larger amount of work to be done in less time—girls to depend more upon their own resources, arrange own work, etc.

2. Work to include fully Course I. and following extra instruction.

HOUSEWIFERY.	COOKERY.	LAUNDRYWORK.	EXTRA LESSONS.
1. Spring cleaning. Plan of work. Renovations, etc. Use of vacuum cleaner.	Revision of Course I. 1. More advanced cookery in all branches.	1. Revision of Course I. taking finer things.	1. Personal cleanliness and habits. Teeth, hair, nails, etc.
2. Lamps—care, etc.	2. Jams and marmalade.	2. Washing of blankets.	2. Infants.
3. How to take a house—formalities, etc.	3. Pickles.	3. Chintzes and Cretonnes.	(a) Care and feeding.
4. Drainage. Extra information. Where the drain leads to—tests. Drainage of a town. Flushing, etc.	4. Weekly menus and cost.	4. Simple dry cleaning of furs, gloves, etc.	(i) Birth to dentition.
5. Water supply. What to do in case of frozen pipes, stop taps, etc. Burst pipes, etc.	5. More advanced dinners.	5. Infants' clothing.	(ii) Bottles.
6. Fire. Procedure in case of fire—house or clothing. Fire guards. Danger of flannelette.	6. Catering for parties—special inexpensive dishes and beverages as trifle, blancmange, lemonade, etc.	6. Use of gum, bran, ammonia, etc.	(iii) Dentition, 18 months.
7. Cleaning of water bottles, stained marble, etc.	7. "Lump" cakes—icing and decorating cakes.		(iv) Sterilised milk.
8. Making "thrift" garments—cutting down garments. Knitting.	8. Serving of afternoon tea and preparing trays for invalids.		(b) Cradles and cots.
	9. Additional dinners and perhaps the making of wholesome sweets.		(c) Complaints : croup, convulsions, diarrhœa, etc.
	10. Christmas fare. Mince meat. Plum puddings, etc.		3. Infectious disease—preparation of room—notification.
			4. Evils of furnishing on hire system—money lending, etc.
			5. Hygienic and unhygienic clothing—garters, corsets, etc.
			6. Simple physiology.
			7. Digestion, etc.
			8. How the mother in the home can assist in keeping the child healthy.

HOUSEWIFERY.	COOKERY.	LAUNDRYWORK.	EXTRA LESSONS.
<p>9. Upholstering, chair-making, loose cover-box, footstool, etc.</p> <p>10. Bed curtains.</p> <p>11. Cradle from banana crate or clothes basket. Clothing and pillow for above.</p> <p>12. Use of tools. Knocking in nails, screws, etc.</p>	<p>11. Meat-safes, larders, etc.</p>		<p>9. Selection from other subjects mentioned.</p>

COURSE III.

1. Courses I. and II. *fully revised and practised.*
2. Girls to be given responsibility of complete housekeeping.
3. Each girl to act as housekeeper during the course, and to plan and superintend work of house under supervision of teacher.

Special Points of Course III. and Extra Instruction.

HOUSEWIFERY.	COOKERY.	LAUNDRYWORK.	EXTRA LESSONS.
<p>1. Carpets. Mending and joining—stretching—rings, etc.</p> <p>2. Cleaning door mats and hearth rugs.</p> <p>3. Invalids. Changing sheets. Bed sores and treatment.</p> <p>4. Spring cleaning. Full preparation for sweep, etc. Cleaning Venetian blinds. Renovation of mattresses, etc.</p>	<p>1. More advanced cookery.</p> <p>2. Dinners. Artisan to five course dinner.</p> <p>3. Vegetarian diet. Advantages and disadvantages.</p> <p>4. Birthday cakes.</p> <p>5. Extra dishes as roast fowl.</p>	<p>1. Courses I. and II.</p> <p>2. Extra theory.</p> <p>3. Chemistry of laundrywork.</p> <p>4. Public wash-houses.</p> <p>5. Soap-making. If possible visit to public wash-houses and Port Sunlight Soap-works.</p>	<p>1. Exercise in regard to health.</p> <p>2. Disposal of household refuse.</p> <p>3. Mending china and glass.</p> <p>4. Stores to be bought in bulk, and reasons.</p> <p>5. Sources of food supplies of Great Britain.</p>

HOUSEWIFERY.	COOKERY.	LAUNDRYWORK.	EXTRA LESSONS.
<p>5. Cleaning lacquered articles.</p> <p>6. Visiting and entertaining.</p> <p>7. Furnishing—with prices : (a) Cottage home. (b) Better class house.</p> <p>8. Knitting and crocheting. Rug-making—wool and rag.</p> <p>9. (i) Papering (box or room). (ii) Whitewashing (yard or coal house). (iii) Distempering.</p> <p>10. Making homely toys. (a) Doll's house from orange box. (b) Doll's bed from notepaper, boxes, etc.</p> <p>11. Raphia work, serviette rings, etc.</p> <p>12. Simple millinery.</p>	<p>6. Importance of "dishing up" food daintily.</p> <p>7. Complete cooking and "dishing up" of four course dinner. Waiting. Laying table, etc.</p> <p>8. Fancy folds for serviettes.</p>		<p>6. Adulteration of food. Law. Food commonly adulterated : flour, coffee, milk, etc.</p> <p>7. Preservation of food. (a) Methods. (b) Advantages and disadvantages.</p> <p>8. Dust-composition. Danger to health.</p> <p>9. Cost of living. Country and town.</p> <p>10. The citizen. Duties of women as citizens.</p>

E.

ALTERNATIVE SCHEME OF HOUSEWIFERY.

Lessons of 2½ hours' duration.

1. The chief things that make a healthy house. Need for continual warfare with dust and dirt. The various apparatus and materials required in cleaning the house. Cost of same.

Practical work. Cleaning out a cupboard and rearranging the contents. Sweeping and dusting—the use of dry and damp dusters. Care of brushes when not in use.

2. The ordinary utensils used in cooking. Cost—economical substitutes.

Practical work. Cleaning utensils—washing dish-cloths.

3. Cleaning of iron and steel—materials required. Various kinds of fuel-combustion. Economy in use of fuel.

Practical work. Blackleading a stove or grate, laying and lighting a fire. Cleaning of knives and forks. Revision.

4. Cleaning of wood (plain and painted)—materials required. Water as a cleansing agent.

Practical work. Scrubbing a table—sweeping and scrubbing a floor. Cleaning various wooden utensils. Washing paint.

5. Cleaning brass, copper, tin, and white or plated metal. Materials used and cost. Laying a table for dinner.

Practical work. Cleaning brass fire-irons, tin canisters, forks, spoons, etc. Setting a dinner-table.

6. Care of sinks, drains, pails, and lavatories. Use of a dust bin. Right disposal of household refuse. Disinfectants and their use.

Practical work. Tracing water supply and waste pipes. Cleaning sinks, hand basins, etc.

7. Cleaning leather. Washing of glass and china.

Practical work. Cleaning boots and windows. Washing of glass and china. Laying a tea-table.

8. Polishing furniture—making of furniture polish. Washing hair brushes and dusters.

Practical work. Polishing furniture. Washing hair brushes and dusters.

9. Hygiene of the bedroom. Need for open windows, clean bedding, and constant overhauling. Use of brown paper and newspaper quilts.

Practical work. Making the bed of a baby's cot. Making newspaper and brown paper quilts. (Cot from a banana crate and bedding to be made in the ordinary handicraft and needlework lessons of the school.)

10. *Examination.* (All practical work.)

NOTE.—It is possible to comprehend more practical teaching than might be done in districts where the theory is not taken so fully in the schools as it is in Liverpool.

APPENDIX II.

NOTES ON SCHEMES OF HANDICRAFT IN CENTRES AND SCHOOL WORKSHOPS FOR BOYS IN PUBLIC ELEMENTARY SCHOOLS, WITH SPECIMEN SCHEMES OF HAND-WORK ADOPTED IN PARTICULAR SCHOOLS AND COVERING ALL CLASSES IN THOSE SCHOOLS, AND ALSO SYLLABUS OF COOKERY INSTRUCTION FOR BOYS.

A.

NOTES ON SCHEMES OF HANDICRAFT.

Drawing in Relation to Handicraft.

The drawing, connected with the handicraft, should serve as an aid or complement to the practical work at the bench, and so long as this is properly done its true function in manual training has been achieved. The following suggestions are therefore made with the view of rendering some assistance in keeping drawing in its proper relation to practical work.

- (a) The first drawings made in the Centre should be *sketches* (either oblique, isometric, or perspective) after the model has been constructed. These drawings will serve as a record of work done, and should contain dimensions, kind of wood used, and any other particulars which may help in recording the details.
- (b) The next step would be to have the same kind of drawings made but with the necessary instruments, viz. drawing board, tee square, and set squares. This will give a *mechanical* pictorial representation of the subject made or to be made.
- (c) Following the pictorial representation, the next step is drawing in plan and elevation, which usually should be begun early in the second year.
- (d) From the foregoing suggestions, it should not be assumed that in all cases this rigid sequence should be strictly adhered to. In some cases boys, from the first, may sketch plans and elevations; and in such cases they should be encouraged to proceed to use instruments and represent their work with some measure of exactitude. The above should be regarded as suggestions only.

Order of Tools.

With regard to the practical work, it should be remembered that the impulse

and desire to "make something" is very strong in boys, especially in the earlier stages of the course, and due advantage should be taken of this in framing the outline of the work. The use of the tools should be introduced gradually, but too much instruction where the boys remain passive for any long period should be sedulously avoided. The plane (already set for working) and the tenon saw should be sufficient for the first two or three models. The use of the try square and marking gauge may be deferred until the boy has been led to realise the necessity and advantage of them. The "setting" and "unsetting" of the plane should also be introduced after the boys have become familiar with its use. The proper handling and use of the chisel should be demonstrated, and warnings as to the personal danger attendant upon improper use carefully given. This remark applies to the use of all edged tools. It will also be found advisable to demonstrate to the boys the best way of using all tools, with the attendant risks of misuse, but this should not be construed into the giving of regular and formal lessons.

Lessons on Tools, Wood, etc.

Lessons on the construction of tools for their several purposes should form part of the instruction, and the underlying principles generally discussed; the lesson, as a rule, should take the form of a conversation and not that of a lecture. The boys should at all times be active participants in the work and not merely passive recipients. So far as time and circumstances permit, the general properties of the woods used, and the recognition of the common kinds, the countries from which supplies are obtained, and the processes of growth from seed to tree, and the nature study connected therewith, should be included in the syllabus. At the same time, due relation of time and importance of the various aspects of the work should be borne in mind.

Character of Work.

Though the character of the practical work may, in the early stages, not be up to the high standard that has usually been regarded as satisfactory in the past, there should be no falling away from the ultimate standard to be attained later on. The standard which should be set is one a little better than each boy is capable of attaining at any particular time, so that he should be always striving to reach that standard. So long as he does his best—the best that he is capable of at the time—his work must be regarded as satisfactory.

Record Cards.

The Record Cards will be of service in estimating the character and value of the work performed during the whole career of the boy in the Manual Instruction Class, and these records should be carefully and rigorously kept. They should be regarded as a valuable testimonial to the boy's attention and perseverance when seeking a post on leaving school, and when that happens the record card should be presented to him, signed by the instructor as a certificate of merit in this particular work.

Constructional Work.

Models of "one piece" should be used only in the earlier stages, unless some sound reason exists to the contrary. What is highly important is that the work should develop, so soon as practicable, on constructive lines. The power to put things together and to make them "to go" or "to work" should be encouraged at every opportunity, and this side of the work should receive earnest consideration.

The advantages of this constructional work are twofold, viz. :

- (a) It gives great scope for the exercise of ingenuity, and the varied application of constructive principles ;
- (b) For the comparatively small quantity of wood used it supplies a good deal of work, making it relatively less expensive.

Other Materials than Wood.

In order that a much wider range in the choice of models may be obtained, materials other than wood can frequently, and with advantage, be employed. This combination of materials should not be strained in order to introduce another medium, thus rendering the effect of the combination artificial. The most suitable material at hand should in all cases be employed, whether it be tin, lead, brass, string, glass, or anything else.

Contributory Schools and Centres.

One difficult and important matter to be faced is the mutual service that the contributory schools and the centres should render to one another. Where it is not easy to enlist co-operative work, an effort must be made to supply the deficiency. For this purpose it will perhaps be found necessary and advisable, when a model has been decided upon, to give a short lesson on its application in order that, subsequently, the boy may work at his problem more intelligently, and eventually arrive at some conclusion it was intended he should do, or that the model should be put to some further use by him.

The General School Curriculum.

So far as subjects of the general school curriculum are concerned, these will not be difficult to ascertain, and they should be a guide as to where the work of the Centre can be made a help in the better understanding of those subjects if a profitable application of them to the work in the Centres be introduced. It should be remembered that though geography, history, or science are not specifically taught in the Centres, much useful work in this and in similar directions can and should be accomplished.

Communal Work.

With boys who have had some experience of handicraft work, a piece of communal work may with advantage be undertaken, but in some cases the work should not be divided so as to constitute a juvenile application of the "division of labour."

Each boy should be given a *section* of the work to perform throughout, and not be allotted one process for the whole model. The character and temper of the boys should be studied, so as to entail the hearty co-operation of each for the well-being of the group and the successful execution of the whole piece of work.

Conclusion.

In conclusion, it will be well to take stock of the whole situation and the peculiar circumstances of each Centre before entering upon the work of formulating any definite line of action. Having done this, a general basis of several schemes should be laid down which may be varied and modified in order to adapt the scheme to the varying needs of the contributory schools, and the varying needs and proclivities of the boys from those schools. Further circulars of advice and suggestion, including illustration of new models as they present themselves, will be issued from time to time, and it is sincerely hoped that the good work already begun may be carried on successfully in the future.

B.

SPECIMEN SCHEMES OF HAND-WORK.

SCHOOL I.—BOYS. ACCOMMODATION 591.

<i>Time</i> :	Standards I., II.	75 mins. per week.
	III.	120 " " "
	IV.	60 " " "
	V.-VIII.	75 " " "

These times are exclusive of 135 mins. spent at a recognised light woodwork course by 30 boys from Standard VII., and of 150 mins. devoted to handicraft at a Centre by 180 boys.

In addition to these fixed periods for hand-work, portions of the times set apart on the time-table for arithmetic, history, geography, nature and observation lessons are often used for handwork exercises having a direct bearing on these subjects.

General Note.

In this school hand-work is not treated as an independent subject ; it is used to help forward the correct understanding of the other subjects in the school course. The education of the boys is made as practical as possible ; originality and initiative are fully encouraged, and—in the upper classes—much of the work is performed at home from suggestions, measurements, and drawings given at school. Parents are much interested in this side of the school-work, and valuable help has been obtained along this line.

CLASSES II. A, B, AND C. (THREE SECTIONS.)

- I. *Accurate Work*. Paper folding ; paper tearing ; paper cutting of illustrations for observation lessons and mounting of same ; paper *modelling*.
- II. *Plastic Work*. Modelling in *clay*, *sand*, *modlex*, and *putty* of natural and fashioned objects. All the observation lessons are specially illustrated by means of these media. Natural features as islands, mountains, river basins, etc., being noted.

CLASS III.

- I. *Accurate Work*. Cardboard cutting ; cardboard modelling and modelling in paper. The examples are obtained from the various class-lessons.
- II. *Plastic Work*. Modelling in sand, clay, modlex, and putty as part of the observation and nature lessons. Simple exercises leading up to the reading of an easy contour (orographical) map form part of the course. Boys draw plans, model maps and draw simple maps from teacher's model. The colours used are limited to three in number.

NOTE.—The course of observation lessons mentioned above is designed to take the place of history, geography, and elementary science lessons in Classes II. and III., to prepare the boys to take up the definite study of these subjects in Class IV., and the handling and modelling of things forms the basis of the work.

CLASSES IV. AND V.

- I. *Accurate Work*. Cardboard cutting and modelling. Advance upon work of Class III. Paper work to teach fractions, decimal area, etc. Modelling in paper, using the backs of old books and brown paper. The rough costumes, helmets, etc., for the dramatic work in history are made by the boys. Examples of cardboard and paper work are : huts, houses, boats, castles, weapons, assault-towers, drawbridges, etc.
- II. *Plastic Work*. Modelling of maps, battlefields, river valleys, bridges, wind-mills, waterwheels, etc., in sand, putty, and modlex. Many illustrations for geography and history are obtained in this way. Exercises in contour work ; the making of easy raised maps, and the reading of simple orographical maps are continued in this section.

CLASSES VI. AND VII.

Modelling in paper and cardboard to teach area, fraction, decimal, metre, etc.—advance upon IV. and V.

Light woodwork exercises designed to help the other school subjects, as history, geography, and science. The boys provide their own wood, and the fretsaw is the chief tool. Tudor carriages, ploughs, theatres, spinning wheels, fireplaces, etc., are made by the boys.

Modelling in putty of geographical and historical subjects is carried on here. Contour work ; reading of orographical maps, also drawing of same, and making relief maps in putty forms part of the work of this division.

CLASSES IX. AND X.

The boys of this section illustrate their lessons wherever possible. Raised maps, theodolites, protractors, parallel rulers, sundials, weather vanes, etc., for use in geography, history, and nature knowledge lessons, are made in putty, cardboard, and wood. Weather charts, temperature and pressure charts are kept by the boys.

In geography, models illustrating the lessons are made and set scenes are constructed—boys working together in co-operative effort.

In history special lines are followed up, *e.g.* History of spinning through handloom to present-day loom. History of methods of locomotion from the litter to present-day carriages. History of bicycle from the hobby-horse to the motor-cycle. History of bridge construction from earliest forms to bridges of present day. Many of the objects are sent to the Girls' and Infants' Schools to servé as illustrations for special lessons, and are found to be extremely useful.

The making of raised maps, with contours cut out of cardboard or wood, is continued in this class. Drawing of simple diagrams and graphical representations in geography and nature knowledge forms part of the course.

Fretwork is encouraged amongst the boys, and all kinds of useful and ornamental articles are made at home.

SCHOOL II.—BOYS. ACCOMMODATION 360.

Time : Standards I., II., and III. at teacher's discretion.

IV. 135 mins.

V., VI., and VII. 165 „

Handicraft Room. Classes 1, 2, 3 (Standards IV., V., VI., and VII.) spend half a day per week in the specially equipped Handicraft Room in batches of 20. (The oldest section spends two half days there.) A special teacher of handicraft is in charge.

The course of work embraces woodwork, tin, and other metal work (lathe, vice, forge, etc.).

The models in the 3rd Year Course are based chiefly on "Everyday Science" lessons taken in class, also apparatus required to illustrate lessons given in class, *viz.* measuring rods, plumb line, spirit level, sundial, scales, balance, etc. Other examples are : Cradle for use in Housewifery Centre, model bed for use in sick-nursing lessons.

In the 1st and 2nd Year (IV., V.) the pupils proceed from models of a flat nature (cardboard, etc.) to construction, mainly in wood and wire, of models to illustrate gravity, centre of gravity, direction, natural forces, wind, water ; the drawings embracing the three dimensions by pictorial sketches, etc. The scheme throughout,

and each *type* of model, has a definite point in view, though the pupils themselves determine the model which shall illustrate the principle involved.

As occasion demands, the pupils in a section combine to construct a number of models, forming a complete illustration.

Farmyard, comprising house, garden, rails, seats, stables, shippon, kennel, pond, etc.

Dairy, and tables, stools, churn, cheese-press, milk cans, strainer, etc.

Promenade, and beach, bathing-vans, boats, pier, shelters, seats, etc.

Shops, greengrocer, baker, butcher, and necessary fittings, counters, shelves, etc.

Old English village, church and lych-gate, village inn, stocks, pillory, mounting stone, turnpike gate, thatched cottages, waterwheel, village green, maypole, etc.

Fire engine station, engine, carriages, buckets, lamp, hydrants, etc.

The class teachers taking the hand-work below Standard IV. use paper and cardboard to illustrate the various problems in mensuration and mathematics, pupils being led to determine for themselves the formulæ required, also diagrams for use in geometrical and geographical lessons. In the lower classes paper and cardboard are employed for measuring, division, fractions, decimals, areas, etc., whilst modlex is used to illustrate the terms in geography, events in history, and the songs, poems, and stories which the children are being taught.

SCHOOL III.—BOYS. ACCOMMODATION 373.

<i>Time</i> : Standards I. and II.	180 mins. per week.		
III. and IV.	150	”	”
V.	180	”	”
VI.	200	”	”
VII., VIII.	150	”	”

Clay Work. Standards I., II., III.

Modelling from simple objects in the solid, or low relief. Illustrations of historical objects, geographical models, science and nature work.

String Work. Standards I., II.

Simple knots, netting, hammock-work.

Raphia. Standards I., II.

Winding, plaiting, weaving.

Cane Work. Standards III., IV.

Weaving, matmaking, basketwork.

Paper—cardboard. Standards I., II., III., IV., V., VI.

Technical and free models. Application to arithmetic, mensuration.

Book-binding in V., VI.

Light Woodwork and Knife Work. Standards IV., V.

Combined course. Free and set models.

THE THINKING HAND

Woodwork. Standards VI., VII., VIII., in workshop.

Bench work course.

Free and set models, toys, etc.

SCHOOL IV.—BOYS. ACCOMMODATION 247.

Time : Standard I. 130 mins. per week.

II., III., IV. 140 " " "

V., VI., VII. 120 " " "

Geography. Clinometer ; plane table with sight rules ; simple sextant ; simple theodolite ; prismatic compass ; rain gauge ; contour maps ; models of district in plasticine and plaster of Paris ; map of district.

General Observation. Aeroplane ; works of clock ; cradle for gold sifting ; tent ; dock locks ; turbine ; bee line.

Arithmetic. Pantograph ; punnets (cylindrical and rectangular of veneer).

Science. Pulleys ; windlass ; Cooper's disc ; Tobia's tube ; Sherringham valve ; Ellison's brick ; drop hammer ; wheel-barrow ; convection apparatus ; steel-yard ; scales.

Arithmetic and Geometrical Models. Triangle ; polygons ; discs ; box ; model of school premises ; gates (various kinds).

Geography. Sledge ; snow-shoes ; toboggan ; Assuan dam ; settler's hut.

General Observation. Deck chair ; swing ; signals (distant and home) ; coal-mine cage ; shaft ; trestle ; stile ; easel.

STANDARD IV.—SECTION I.

LESSON.	MODEL.	MATERIAL.
The Alps.	Model of section with passes of Mt. Cenis, St. Gothard, and St. Bernard.	Plastic.
Italy.	1. Gondola.	Thin card.
	2. Map of S.W. Europe with scale of miles to show saving of time by overland route to India.	
	3. Alpine chalet.	Veneer.
France.	1. Hand-loom.	"
	2. Hand wine-press.	"
	3. Stilts and walking-pole.	"
	4. A boulevard : Trees of sticks and parsley, seats, tables, cafe.	
Spain.	1. Relief map and model.	Plastic.
	2. Model of section of Moorish mosque (cf. architecture).	"

LESSON.	MODEL.	MATERIAL.
The Rhine.	1. Bridge of boats (Cologne), composite.	Veneer.
Denmark.	1. Danish vessel.	"
	2. Butter churn.	"
Holland.	1. Canal and swing bridge.	"
Belgium.	1. Dog-cart.	"
	2. Drawbridge.	"
Russia.	1. Troika.	"
	2. House built on piles.	"
Scandinavia.	1. Ski and toboggan.	"

SECTION II.—PHYSICAL GEOGRAPHY.

LESSON.	MODEL.	MATERIAL.
Day and night.	Toy to illustrate varying lengths of daylight.	Thin card.
The seasons.	Clay model of globe with zones.	Plastic.
The tides.	Dock with gates.	Plastic, veneer.
Springs.	Intermittent spring.	Clay, sawdust.
	Each child to make a sectional model.	
Winds.	Graph of pressure at different places. Isobars.	
Rainbow.	Colour chart to show composition of light.	Card, paint.
Levels and slopes.	Sight-rule.	Cardboard.
Flow of water in this neighbourhood.	Relief map or contour of land from school to Queen's Drive.	Plastic.
The river at the landing stage.	Sketch to show piers on the Cheshire side. A section across.	
What is seen at the stage.	Storm cone.	Thin card.
Sewers.	Water trap.	Plastic.
Dredgers (suction and bucket).	Buckets on endless chain (composite).	Card, paper.
A graving dock.	A dock.	Clay.

N.B.—All models in Section I. are based upon pictures or diagrams shown to the children, who make their own models to their own declared measurements when necessary.

In Section II. all models and drawings are the results of children's own observation.

THE THINKING HAND

STANDARD III.

Subjects. Arranged to correlate with scheme of lessons in geography, history, science, etc.

Geography. Relief maps of England, North of England, Mersey Basin, Scotland, Ireland.

Models in modlex of a spring, a watershed.

History. British war chariot, Norman castle gate of drawbridge, shields, crowns etc., of period, flail, tally.

Science. Windmill.
Ship with masts and sails. } (Inclined planes and wind pressure.)
Plumb line, wall ventilator, sundial.

Exercises to correlate with Arithmetic.

Square mat, square tray, book cover, rectangular prism, match box, pin tray, triangular prism, taper holder, hexagonal mat, cube, money box, box with lid, letter case.

HAND-WORK.—STANDARD II.

These lessons will be connected with the history, geography, and observation lessons.

CLAY OR PLASTICINE.

PAPER CUTTING.

Observation.

Vegetables, fruits, flowers, tools, bell, birds' beaks, birds' feet, leaves, stems of plants, canoe, lighthouse.

Wall pocket, tidy, triangular basket, bags of different sizes, envelopes, square tray, box with lid, bon-bon box, card case, book cover, stamp case, cart, chair, rabbit-hutch, sentry box, table, motorists' warning-post.

Geography.

A spring, river, mountain, lake, volcano, peninsula, island.

*Geography.**History.*

War chariot, battle-axe, shield, cross-bow, arrows.

Weather vane, sundial (simple shape).

Arithmetic.

Cube, clock-face.

CLAY-MODELLING.—STANDARD I.

Objects to be selected from the history, geography, or observation lessons.

Observation. Model of squirrel with nut. The sparrow: nest, head, beak. Acorn and oak-leaf. Orange: fruit and leaf. Bee-hive. Leaves from the object. Reaping-hook: corn. Nuts. Bulbs: various stages. Apple and leaf. The robin: nest, etc.

History. Bow and arrow. Viking's sword, spear, and shield. Armour and weapons of soldiers from various periods of history taken. Herdman's hut (Alfred and cakes).

Geography. Wigwam of Red Indian. Canoe of Red Indian. Model to illustrate and show difference between a hill and a plain. Simple model of a river. A sledge (Canada).

General. A basket. A pipe.

PAPER-FOLDING AND CUTTING.

Arithmetic. Cutting of squares to measurements.
Cutting of oblongs to measurements.

Geography. Simple sundial. Compass-face. Watch-face.

History. Cutting of Viking's axe. Cutting of Norman spear. Cutting of Saxon shield. Cutting of a halberd.

General. Folding to make a house. Folding to make a dog-kennel. A square envelope. A wall-pocket—easy designs. A long envelope. A photo-frame. Cutting out of wooden spade. An ash-tray.

SCHOOL V.—MIXED. ACCOMMODATION 1220 (INFANTS 370, JUNIORS 420,
SENIORS 430).

GENERAL SCHEME OF SCHOOL HAND-WORK.

Time: Age 11 and upwards, 2 half-days per week (1 half-day in classroom and 1 half-day in workshop).

Age below 11 years, 1 half-day per week (in classroom).

All boys eleven years old and over take handicraft class in the Manual Room (fitted with benches for woodwork, metal work, etc.) on one occasion per week in accordance with regulations of the Board of Education (Code, Sch. III. paragraph 36 (1) a). In addition all boys attend hand-work classes in the ordinary classrooms one half-day per week. Thus, including drawing and work done to illustrate other school subjects, the total time given is more than three half-days in the case of older boys, and over two half-days in junior classes.

The following plan shows in outline the nature of the work done.

Infants. Use of all usual kindergarten materials in connection with every possible lesson, each operation being made concrete by the child's own action.

- Standard I.* Knitting. Weaving. Paper-cutting, and modelling (scissors). Clay-modelling.
- Standard II.* Paper-modelling. Thin cardboard work (use of knife). Working to drawings. Clay-modelling.
- Standard III.* Cardboard models. Introduction to light woodwork (knife and light tools). Clay-modelling.
- Standard IV.* Cardboard models. Decorative work on models. Light woodwork at bench and in classroom. Use of various available materials.
- Standard V.* Bench and classroom work in wood. Original design encouraged and scholars' own ideas developed in construction.
- Standard VI.* Development of work as in Standard V. Light metal work added. Construction of models involving use of various materials.
- Standard VII.* Individual and communal work. Importance attached to scholars' choice of exercise and method of construction.

SCHEME OF HAND-WORK OF CLASSES WORKING IN ORDINARY CLASSROOMS.

The following exercises are given as indicating what might be done, rather than what must be done. Freedom in choice of suitable exercises is left to each teacher, who will probably give scholars many opportunities of choosing what they would like to do. In this way the handwork lessons may serve to arouse greater interest in school lessons generally, and to bring the child's interests outside the school, in the home, the street, etc., into some relation with his school work.

STANDARD I.

Weaving, etc., Raffia Work.

On frames : Tidies, handkerchief-cases.

Circular weaving : Shell pincushion, cushion cover, book cover, blotter, work-bag, needle-case, etc.

Cane work : Mats, work-basket, doll's hat. Simple basket-making.

Paper-cutting and Modelling. Tents, candlesticks, watchman's hut, keys, three-barred gate, crackers, windmill, paper boxes, paper baskets, coin bags, wall-pockets; construction and use of coloured papers; diagrams for illustrating geographical terms, etc.

Clay-modelling. Simple relief maps illustrating hills, valleys, coast, rivers. Simple leaf forms. Animals. Simple fruit and vegetable forms. Modelling correlated as far as possible with such lessons as composition, simple science, geography, etc.

STANDARD II.

Paper and Thin Card. Roman galley, Saxon harp, battle plan (Hastings, etc.), rabbit hut, ark, model illustrating zones, etc.

Flags, letter-rack, screens, labels, mats, boxes, bags, envelopes, brackets, paper baskets, brushes, dustpan, etc.

Clay-modelling. Apple, pear, lemon, etc.

Cricket bat and set of wickets.

Battle plan (fencing, etc., wood strips).

Leaves : holly, mistletoe, ivy, etc.

Simple river basin outlines—Mersey.

Simple relief scenes illustrating stories.

STANDARD III.

Paper and Card. Flower pot cover, bell tent, lamp and candle-shades, model cart, model van, model wheelbarrow, wall-pocket, book cover, kite, postcard album, clock face.

Roman galley, models to illustrate geography, history, and other subjects.

Light Woodwork. Measurement : use of foot-rule, try-square marking knife, cutting knife.

Windwhirl. Toy scales, kite frame, flower stick, plant label, toy train.

Rough models of native dwellings, etc.

Clay-modelling. Battle-axe, spear-head, arrow-head, Lancashire, Devon, and Cornwall, Thames Valley, six northern counties.

Simple leaves, simple flowers, bottle, tools, toys.

STANDARD IV.

Cardboard, etc. Blotting pad, boxes and trays, windmill, boats and canoes, kennel and houses, sentry box, Roman shield, Saxon, Danish, etc., shields, letters in card, etc.

Illustrations for lessons.

Woodwork. Models of ancient implements and weapons. Various simple tools and apparatus used in school, at home, and at play.

Simple communal work : Hanging fern basket.

Wattled Saxon church, etc.

Clay-modelling. Developed on lines indicated in other classes.

THE THINKING HAND

MANUAL INSTRUCTION ROOM.

TIME-TABLE.

M. 9.30-12.

A. 1.30-4.

Monday.

* Woodwork (First Year Course).

Standards IV. and V.

* Woodwork and Metal Work (First Year Course).

Standard V.

Tuesday.

* Woodwork and Metal Work (Second Year Course).

Standards VII. and Ex. VII.)

General Handicraft.

Standard VI.

Wednesday.

* Metal Work (First Year Course).

Standard VI.

Light Woodwork.

Standard III.

Thursday.

* Woodwork (Second Year Course).

Standard VI.

Light Woodwork.

Standard IV.

Friday.

* Woodwork (First Year Course).

Standards IV. and V.

General Handicraft.

Standards VII. and VIII.

Classes marked (*) are taken in accordance with Board of Education Regulations, Code, p. 36, i. (A).

SCHEME OF WORK IN MANUAL INSTRUCTION ROOM.

While the exercises give opportunity for instruction and practice in the proper use of tools and materials, it is evident that owing to scholars having freedom in choice, design, and construction, and the wide field open for correlation with school subjects, no definite exercises can be set out as a scheme. The following examples of exercises worked last year indicate the general plan to be adopted in each class.

Standard VII. and Ex. VII. Plumb rule, T square, pantograph, hand screw, pyrometer, veneer colour disc, pulleys, sundial, steam engine, model locomotive, aeroplane, rain gauge, callipers, opisometer, skeleton sphere, engineer's try square, hand-screw.

Standard VI. Set square, pen and ink stand, windlass, towel-roller, flour scoop, bradawl, model blackboard, knife cleaner, mallet, mitre box, chisel, picture hook, test-tube stand, draughtboard and men.

Standard V. Marble board, hatpeg, pen and pencil rack, mounted cannon, bill file, money box, battle-axe, form, spice grater, meat hook, pen tray, Chinese canoe, see-saw, cart, swing, shield.

Standard IV. Garden seat, weather vane, camp stool, whip handle, weaving needle, top, string-winder, paper-knife.

Standard III. Windwhirl, garden rake, wooden shovel, kite frame, flower stick, ladder, cross, key label, pencil sharpener.

Communal Exercise—12 boys. Chemical balance.

SCHOOL VI.—MIXED. ACCOMMODATION 1690 (MIXED 1140, INFANTS 550).

Time : No fixed periods except for grant-earning classes, which are as follows :

6 classes of 16 boys each in heavy woodwork (2 hours per week).

3 classes of 24 boys and 1 class of 24 girls in light woodwork (2 hours per week).

Except in the case of the "grant-earning" classes, the subject of handicraft is not entered on the time-table, but about one-third of the time given to history, geography, English, arithmetic, etc., is given to handicraft exercises in these subjects, giving a total of from 4 to 6 hours weekly. Some of the hand-work is done in the classrooms, but in addition the school has a room fitted to accommodate 16 boys for heavy, or 24 for light woodwork. As an experiment a second classroom has been cleared of desks, fitted with benches adapted by the scholars, and stocked with tools and various media. Some of the younger scholars spend one hour weekly in this room ; the older scholars use the main handicraft room. The work done in these rooms arises out of the ordinary work of the classes, and the models made are frequently used to illustrate lessons throughout the school.

A class is not confined to the use of any particular material ; the children throughout are encouraged to use whatever materials are best suited to the model under construction.

The scope of the work can perhaps best be indicated by mentioning a number of models recently made, or at present in course of construction, with the medium used in each case.

CLASS.

MODELS AND MATERIALS.

(Recently made or in process of construction.)

Kindergarten.	An orchard : sticks, paper, clay, bunting. A tea table : sticks, paper, clay.
Preparatory.	The seashore : sand, clay, paper, crayon. A railway station : matchboxes, cardboard. A farmyard : matchboxes, veneer, stales, clay, cardboard. A park : clay, veneer, stales, wire, cardboard, string, glass.

THE THINKING HAND

CLASS.	MODELS AND MATERIALS.
Standard I.	Tower of London : cardboard. Walls of Chester : clay, veneer. Indian and Eskimo huts : clay, stales, cotton-wool. Windmill : clay, paper. Lighthouse : clay, paper, cardboard.
Standard II.	Landing of Romans : tableau in cardboard. British village : clay, stales. British chariots, shields, swords, helmets, horns, etc. : clay, wood, cardboard. Maps of Lancashire, etc. : clay, paper (coloured and mounted). " Wind in a Frolic " : tableau in clay.
Standard III.	Norman castle and keep : clay, cardboard, wood. Norman musical instruments : veneer, string. Hawk frame and quintain : wood, cardboard. Railway tunnel, lines, etc. : clay, wood, wire, paper. Scenes from Robin Hood's life : tableau in clay.
Standard IV.	Horse litter : wood, cloth. Sedan chair : wood. Flail : wood, leather. Quintain : wood.
Standard V.	Lincoln gateway : wood, paper. Lighthouse : wood, metal. Motor car, Anglo-Saxon church, sundial : wood. The Aldgate : wood, sand, isinglass. Old English hand-gun : wood, lead, tin, tarred rope. Russian raft : clay, twigs, cloth.
Standard VI.	Contour map of Liverpool Bay : fretwood. Egyptian waterwheel, aeroplane, shadûf : wood, metal. Plate armour : brown paper, blacklead. Maps : paper pulp, paste of flour and water, modlex. Rancher's hut : twigs, wood, straw, sand, cardboard, wax, cotton-wool. Dolls dressed to illustrate costumes. Elizabethan manor-house : clay, paint. Sphinx and camels : clay, paint. Church reading-desk and chained Bible : wood, paint. Gold-digger's encampment : wood, paper.

HANDICRAFT

TOT

CLASS.

MODELS AND MATERIALS.

Standard VII.

Maps : modlex, paint.

Trans-Siberian Railway : wood, modlex.

Siberian village : modlex, wood, metal.

Siberian posting-station : twigs, metal, cotton-wool, wood.

Japanese tea-house : wood, silk, paper, paint, gloy.

Model of school and of district within a radius of $1\frac{1}{2}$ miles :
cardboard, wood, glue.

Model of school building : cardboard, mica, glue.

Conway and Rochester Castles : card, wood.

Standard Ex. VII.

Oxford Castle : wood, card, seccotine, paint.

Scenery for school concert : canvas, wood, charcoal, paint.

Theodolite, survey poles, clinometer : wood, metal, cardboard,
glass.

Spirit level : wood, metal, glass.

Part of wireless telegraphy installation : wood, metal, wire.

In connection with the school hand-work it may be noted the children from Standard II. upwards spend one hour weekly at practical science; that a number of children get some practice in gardening; and that experimental classes are being tried in the following directions: a class of senior girls is taking a course of light woodwork, and a boys' class has been formed in cookery and needlework for boys who intend to go to sea.

It may also be noted that at the rifle range attached to the school, a number of senior boys from this, and from neighbouring schools receive instruction, after school hours, in the use of the rifle.

SCHOOL VII.—BOYS. ACCOMMODATION 203.

Time : 2 hours per week.

HANDICRAFT.—LIGHT WOODWORK.

Scheme for Special Class—subject to alteration, addition, or deletion as deemed desirable.

This class has supplanted the ordinary educational hand-work class which had been in existence for some two years. There is no Manual Centre available. Ages in class range from 11 to 13.

The scheme provides for a 1, 2, or 3 years' course.

The work will be approached from several standpoints, viz. :

1. *Set Scheme.*
2. *The Child* : self-expression, freedom of choice.
3. *Central Idea* : industrial, historical, scientific, literary, etc.
4. *Problematic.*
5. *Co-operation.*
6. *Toy-games.*

1. *Set Scheme.* Include objects to be suggested by simple drawings, the dimensions and method of construction being generally left to the discretion of child.
Alternatives and variations will be required.
A choice can be made from the scheme.
2. *The Child.* Each child will be required to submit a more or less simple drawing, showing his intentions, previous to the lesson. In every case a record drawing will be kept in a school book provided.
3. *Central Idea.* Models—working—to illustrate :
 - (1) Rope spinning and topping—local industry.
 - (2) Agriculture ; history ; irrigation.
 - (3) Simple machines.
 - (4) Subjects suggested by books read.
4. *Problematic.* Occasional exercises given as a test for single lesson or part of lesson, or problem announced to be solved by drawing and experimentation in own time.
5. *Co-operative.* Children will form their own groups. This method will only be taken up by the more experienced boys.
6. *Toys—Games.* This aspect partly included under No. 2, but the teacher will supplement.

Right use of tools taught and better use suggested as occasion arises during work—individually and in class.

Teacher will give *short* demonstrations in technique, such as : rounding, pinning, end-nailing, half-lapping, staying, etc., after certain amount of experimentation, as occasion demands, the principle of model and method of construction being left to boy's intelligence.

Short demonstrations and brief talks on saw-setting, tool-sharpening, etc., will also be given.

EXTRA OBJECTS AND CO-OPERATIVE WORK.

Primitive Drill. Fire Drill.

Irrigation. Shaduf, sakieh, windmill wheel (Norfolk), Archimedian spiral.

Weaving. Frame, loom.

Rope Spinning. Spinner with one bobbin, topping cranks and top.

N.B.—Hemp to be grown, fibre extracted, and spun.

Weather. Clinometer, sextant, anemometer, vane, sundial, hygrometer.

Arithmetic, Mechanics, etc. Altometer, steel-yard, knife-grinder, windlass, parallel rule, reed, expansion meter.

Farm Implements, such as : plough, primitive or otherwise, harrows, sower, roller, horse-rake, etc.

Toys, Games, etc. Humpty Dumpty, Jumping Jack, camera, target and darts.

C.

SCHEME OF INSTRUCTION IN COOKERY FOR BOYS' CLASSES.

Stage I. (20 lessons of 2½ hours each).

1. Use, care, and cleaning of utensils, cupboards, etc. The washing of glass and china.
2. Cleaning, firing, and management of stoves (coal and gas). The laying of a table. The making of bone stock and use of pot liquor.
3. *Soups*. Pea or lentil, rice soup (not sieved), broth.
4. *Potatoes*. Baked, boiled, steamed, fried, crisped.
5. *Fish*. Boiled, baked, fish pie.
6. *Meat* (fresh). Baked, roast, fried, revision of potato lesson.
7. *Meat* (fresh). Irish stew, hot-pot.
8. *Meat and Fish* (salt). Boiled. The making of sauces.
9. *Re-heating*. Brown gravy, mince, toast.
10. *Revision*. (Dishes to be selected by the teacher.)
11. *Vegetables*. Boiled greens, carrots, turnips, parsnips, etc.
12. *Pastry*. Short crust, fruit tart, jam tart.
- 13 and 14. *Puddings* (boiled). Plain suet, fruit puddings, sweet sauce.
15. *Puddings* (baked). Bread pudding, milk pudding with and without eggs.
- 16 and 17. *Bread making*. How to make yeast, brown bread, white bread.
18. *Scones and Tea Cakes*. Tea and coffee.
19. Examination (practical).
20. *Eggs*. Boiled, poached, fried, scrambled. *Porridge*.

Stage II. (20 lessons of 2½ hours each).

1. *Soups*. Stock and care of stock pot. Haricot and tomato soups.
2. *Batter making*. Pancakes, Yorkshire puddings, fritters (with dried or fresh fruits).
- 3 and 4. *Fish*. Fried in batter. Chowder, salt fish and stewed fish, haddocks, bloaters, kippers.
5. *Tripe*. Fried in batter, stewed, mashed potatoes.
6. Meat puddings and sea pie.
7. Revision of re-heating (cottage pie and hash).

8. *Meat*. Mock goose, stuffing, and forcemeats.
9. *Fish*. Stuffed (revision). Potatoes (revision).
10. *Pulse Foods*. Spare ribs and boiled lentils, peas, and haricot beans.
- 11 and 12. *Bread making* (revision). White and brown, currant bread and tea cakes.
13. *Revision*. (Dishes to be selected by the teacher.)
- 14 and 15. *Puddings* (revision). Boiled puddings of various kinds. Use of crusts and bread crumbs.
16. *Invalid Cookery*. Arrowroot, gruel, gargles, beef tea, poultices (bread and linseed).
17. *Re-heating*. "Colcannon," "Bubble and Squeak," fish cakes, potato cakes.
18. *Breakfast Dishes* and making of cocoa, tea, and coffee.
19. Examination (practical).
20. *Corn Flour and Rice Moulds*. Stewed fruits, lemonade, and revision of any weak points.

NOTE.—The order of the lessons may, if necessary, be varied at the teacher's discretion, always provided that the progressive nature of the course be kept in mind

D.

SCHEME OF GARDENING AND NATURE STUDY IN SUBURBAN SCHOOL.

The total area of the garden is a little over a quarter of an acre, which is divided by narrow grass paths into 24 plots of varying size.

Plots numbered 1, 2, and 3 will be utilised by the Infant Classes in conjunction with their object lesson course for the purpose of flower cultivation and observation; plots numbered 7, 8, 9, and 10 being similarly utilised by Standards I., II., and III., and the girls of Standard IV.

Plots numbered 4, 5, and 6 will be utilised by the girls of Standards V. and upwards for the purpose of flower and shrub cultivation. They will also use plots numbered 23 and 24 for vegetables.

The time available on the time-table and marked "Nature Study" is, in the case of Standards I., II., and III., thirty minutes per week, and in the case of the girls of Standard IV. and upwards, forty-five minutes. The instruction will be given in school during wet or cold weather, and in the garden during fine weather.

The boys of Standards IV. to VII. will undertake the heavy manual work throughout, and will also cultivate plots numbered 11 to 22 either singly, in pairs, or as common plots, according to their individual skill, knowledge, and industry. Each of these plots measures approximately one square pole, and is to be divided as 1 is to

4 or thereabouts between the cultivation of flowers and vegetables. Two plots will be reserved for seeds and experimental purposes.

The time available for these lessons is shown on the time-table as :

1. Monday, 1.30 to 2.30. Nature Study and Gardening.
2. Thursday, 1.30 to 3.0. Practical Hand-work or Gardening.

If the weather is unfit for gardening, in the case of No. 1 a theoretical nature lesson will be taken in school, or notes of outdoor work made ; and in the case of No. 2 practical hand-work will be taken, which may or may not be co-ordinated with gardening.

The aims throughout will be :

1. To cultivate a love of nature for itself.
2. To render of practical value the instruction in nature study and to assist in making the ordinary school work concrete and interesting.
3. To cultivate the powers of observation and reasoning, a sense of responsibility, a habit of experiment, and the qualities of carefulness, patience, perseverance, and resourcefulness.
4. To instil a conviction of the dignity of labour.

GARDEN WORK.

It is proposed that the inner walks shall be covered with grass, and that these shall be kept in order by the boys who cultivate the neighbouring plots. The outer border on the boundary road and school playground sides will slope and be laid out as grass banks or rockeries. The outer 4 ft. walks and the open spaces at the corners will also be grass covered.

The work of the year will be arranged as follows :

Winter Months (December to February).

Lay out plots and walks—take off turf where not required, and utilise same for making and repairing walks, constructing banks, etc.—dig up the plots and trench if necessary—subsequently re-dig and manure.

Spring Months (March to May).

Plant potatoes—sow beans, carrots, parsnips, sweet peas, lettuce, radish, and vegetable marrow. As seed beds require they will be thinned out and transplanting done. Different boys will attend to the cultivation of a small selection of the various crops so that their close attention may be concentrated on a few varieties, and that at the same time they may have general experience of a greater number. This will also permit reasonable attention being given to the rotation of crops.

Sow annuals such as mignonette, sweet peas, virginia stock, sunflower, nasturtium, French marigold, calceolarias, stocks and asters—take up bulbs and store—divide primrose roots, etc.—transplant chrysanthemums.

Summer Months (June to August).

Hoe and thin out where necessary—keep walks and banks in good condition—dig up early potatoes and prepare ground for next crop. Stake peas—thin out seed beds and transplant to available ground. Earth up potatoes—water where necessary, and prepare ground for winter crops.

Take up spring flowers or transplant—plant out late summer varieties: pansies, stocks, asters, etc.

Autumn Months (September to November).

Complete arrangements for winter crops—dig up potatoes, carrots, beets, and prepare ground—plant out cabbages, cauliflowers, etc.—cleanse soil. Give room to chrysanthemums—take cuttings from geraniums into school for the winter—plant bulbs (hyacinths, tulips, crocuses, snowdrops), plant out wall flowers—clear beds.

ILLUSTRATIONS



SEFTON PARK COUNCIL SCHOOL



SEFTON PARK COUNCIL SCHOOL

CLAY MODELLING



ST. MARGARET'S C.E. SCHOOL, PRINCES ROAD



ST. MARY'S C.E. SCHOOL, EDGE HILL



BIRCHFIELD ROAD COUNCIL SCHOOL



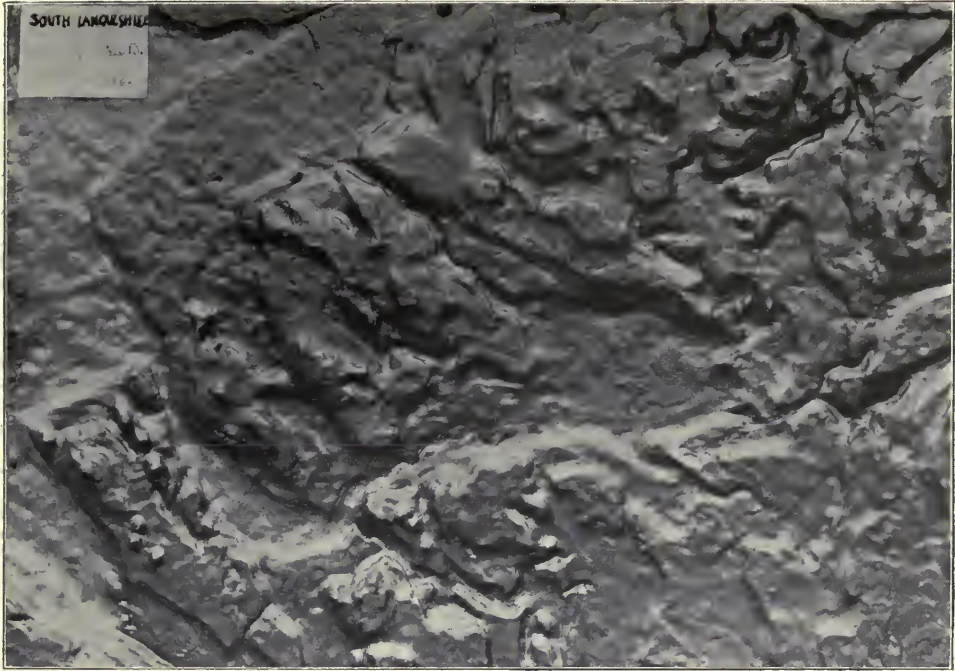
ST. MARY'S C.E. SCHOOL, EDGE HILL



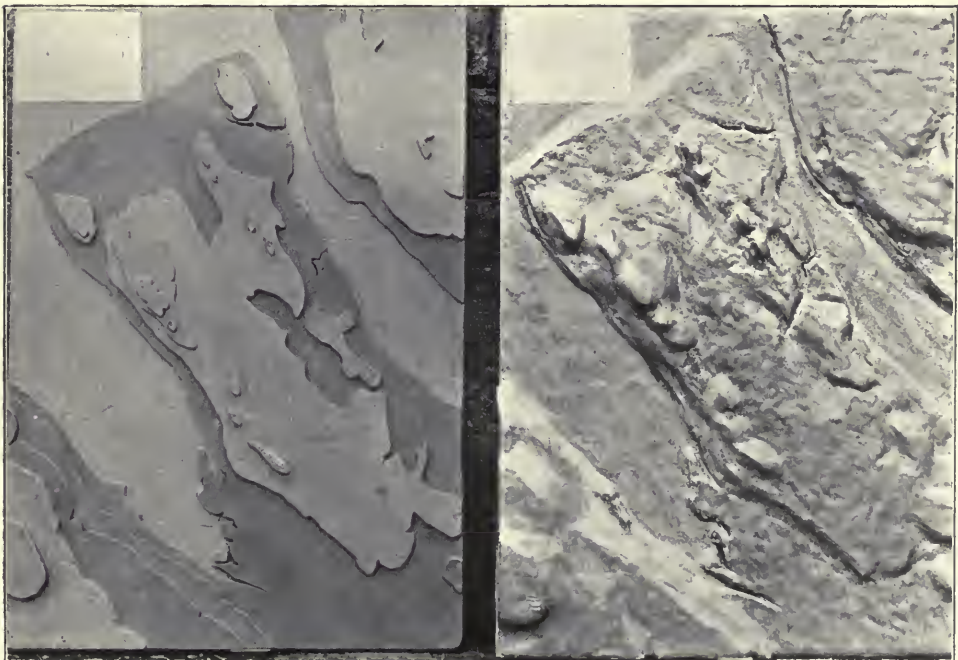
SEFTON PARK COUNCIL SCHOOL.



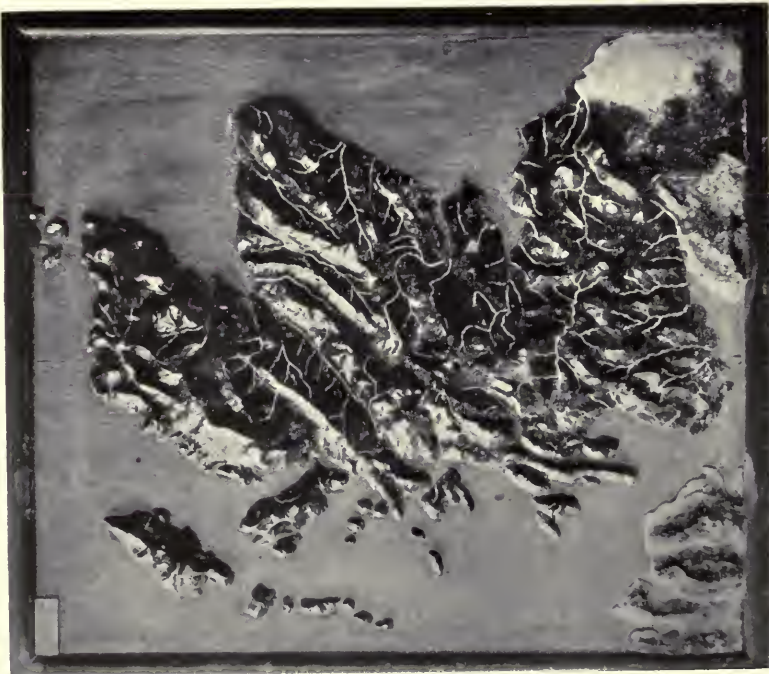
VENICE STREET COUNCIL SCHOOL



CLINT ROAD COUNCIL SCHOOL



CLINT ROAD COUNCIL SCHOOL



BANKS ROAD COUNCIL SCHOOL



WALTON LANE COUNCIL SCHOOL



LISTER DRIVE COUNCIL SCHOOL



LISTER DRIVE COUNCIL SCHOOL



CHATSWORTH STREET COUNCIL SCHOOL



ST. MARGARET'S C.E. SCHOOL, PRINCES ROAD



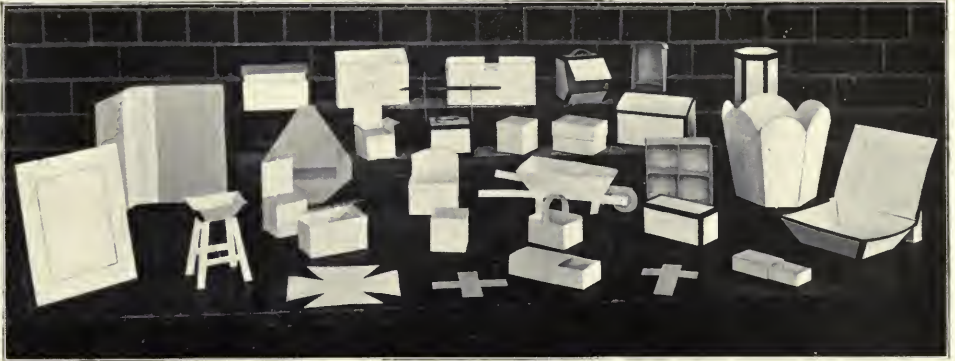
CHATSWORTH STREET COUNCIL SCHOOL



BANKS ROAD COUNCIL SCHOOL



BIRCHFIELD ROAD COUNCIL SCHOOL



LISTER DRIVE COUNCIL SCHOOL



BIRCHFIELD ROAD COUNCIL SCHOOL



CHATSWORTH STREET COUNCIL SCHOOL



CHATSWORTH STREET COUNCIL SCHOOL



CHATSWORTH STREET COUNCIL SCHOOL



BEAUFORT STREET COUNCIL SCHOOL



ST. CHRYSOSTOM'S C.E. SCHOOL

RAFFIA AND CANE WORK



BEAUFORT STREET COUNCIL SCHOOL



ASPEN GROVE C.E. SCHOOL



ST. MARGARET'S C.E. SCHOOL, ANFIELD



ASPEN GROVE C.E. SCHOOL



HARRINGTON COUNCIL SCHOOL



BRAE STREET COUNCIL SCHOOL



ST. BENEDICT'S C.E. SCHOOL



HARRINGTON COUNCIL SCHOOL

CARE OF INFANTS



NORTH CORPORATION COUNCIL SCHOOL



ALL SOULS' R.C. DOMESTIC CENTRE



STANLEY ROAD COUNCIL SCHOOL



ARNOT STREET COUNCIL SCHOOL



BIRCHFIELD ROAD COUNCIL SCHOOL



HARRINGTON COUNCIL SCHOOL



LAWRENCE ROAD COUNCIL SCHOOL



HOPE STREET BRITISH SCHOOL



STANLEY ROAD COUNCIL SCHOOL



ARNOT STREET COUNCIL SCHOOL



HARRINGTON COUNCIL SCHOOL



HARRINGTON COUNCIL SCHOOL



ARNOT STREET COUNCIL SCHOOL



ARNOT STREET COUNCIL SCHOOL



HARRINGTON COUNCIL SCHOOL



STANLEY ROAD COUNCIL SCHOOL



HARRINGTON COUNCIL SCHOOL



ST. PATRICK'S R.C. DOMESTIC CENTRE



BIRCHFIELD ROAD COUNCIL SCHOOL



LISTER DRIVE COUNCIL SCHOOL



ST. JAMES' COUNCIL SCHOOL



ST. ALBANS' R.C. SCHOOL



ST. PATRICK'S R.C. SCHOOL



TIBER STREET COUNCIL SCHOOL



BOALER STREET COUNCIL SCHOOL



STANLEY ROAD COUNCIL SCHOOL



OLD CHURCH C.E. SCHOOL



BIRCHFIELD ROAD COUNCIL SCHOOL



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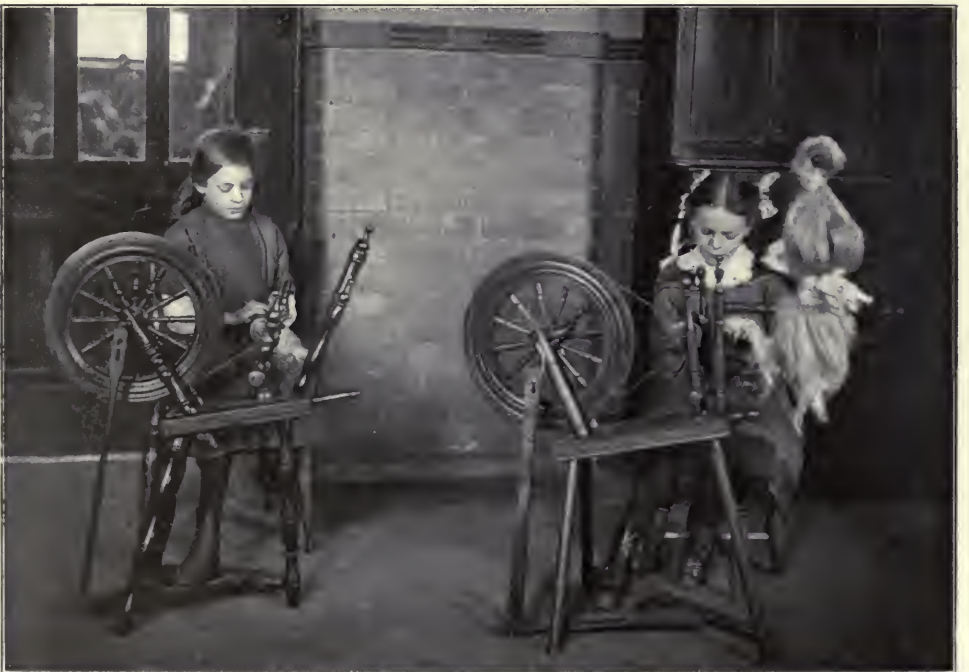
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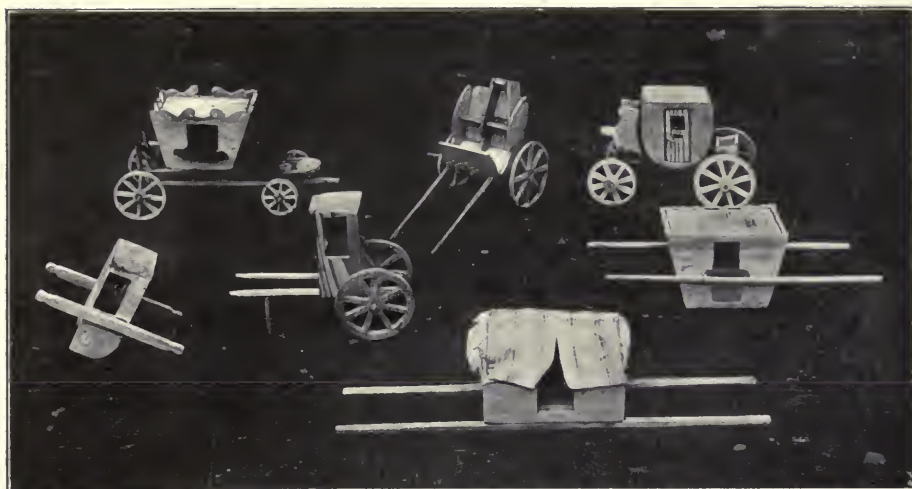
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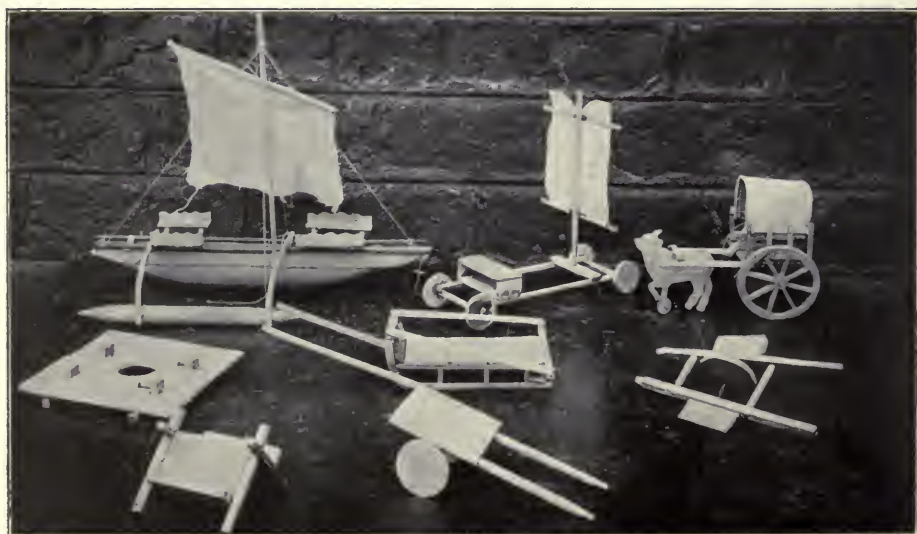
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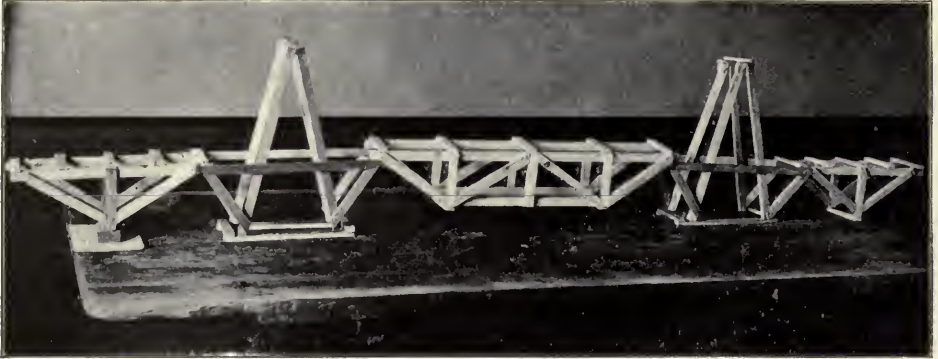
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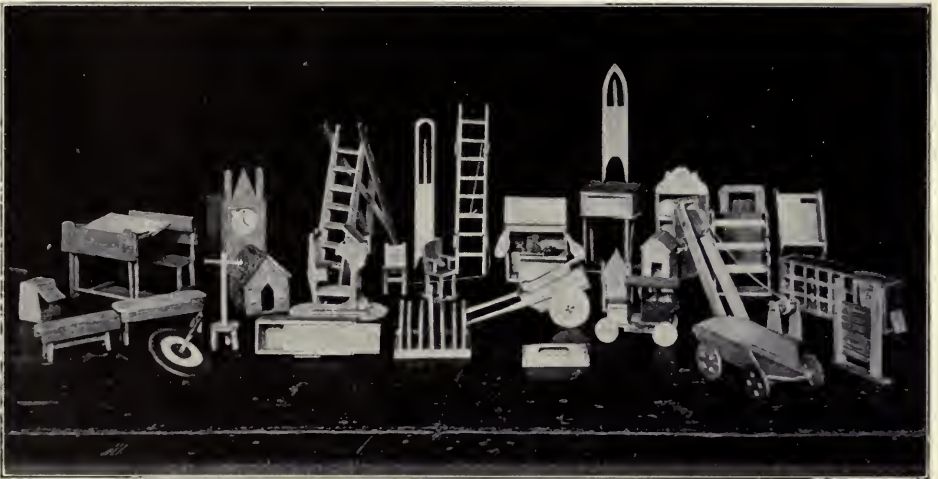
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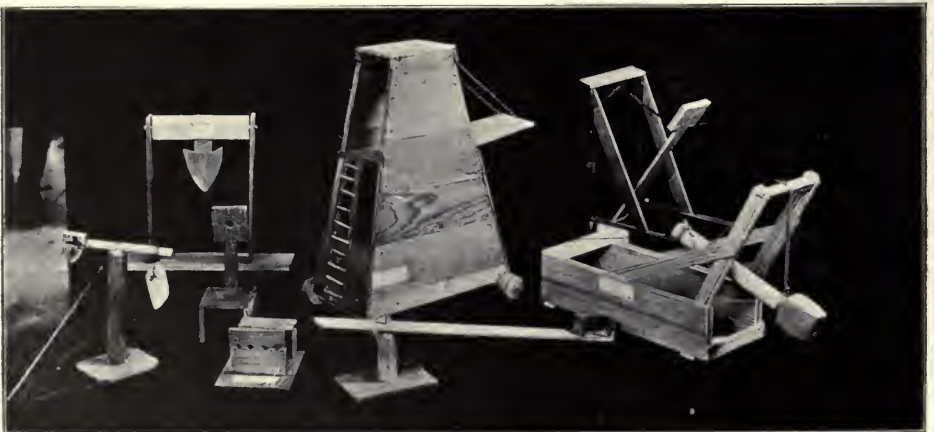
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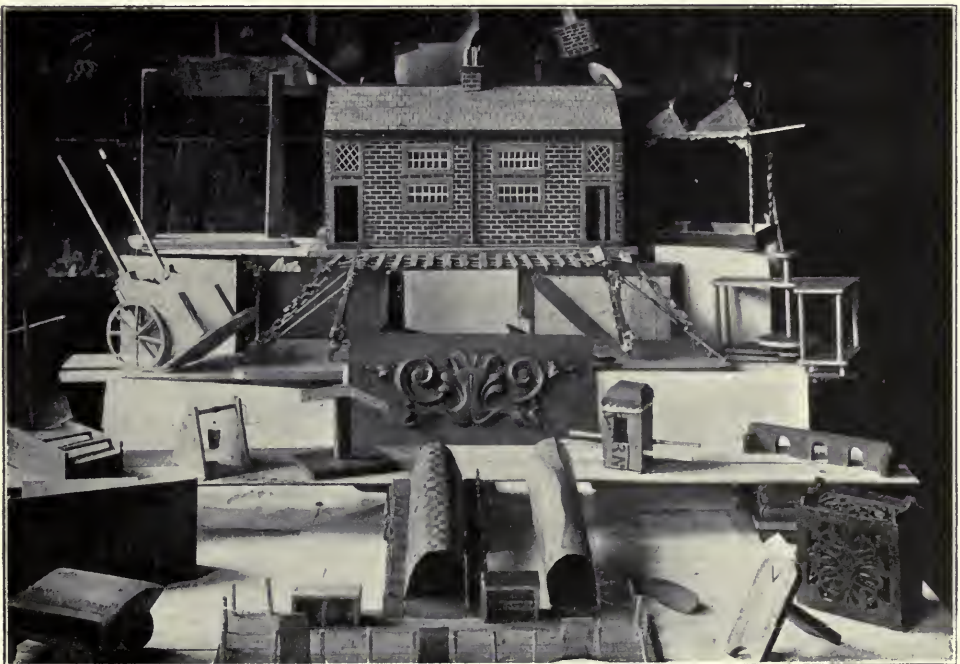
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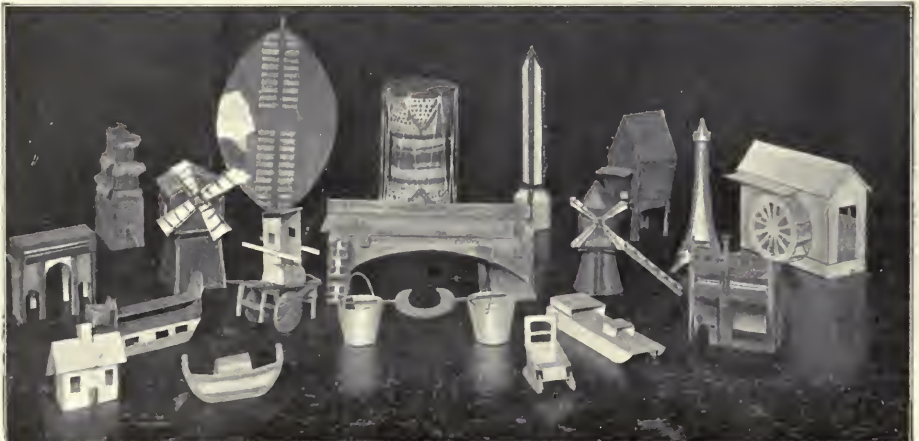
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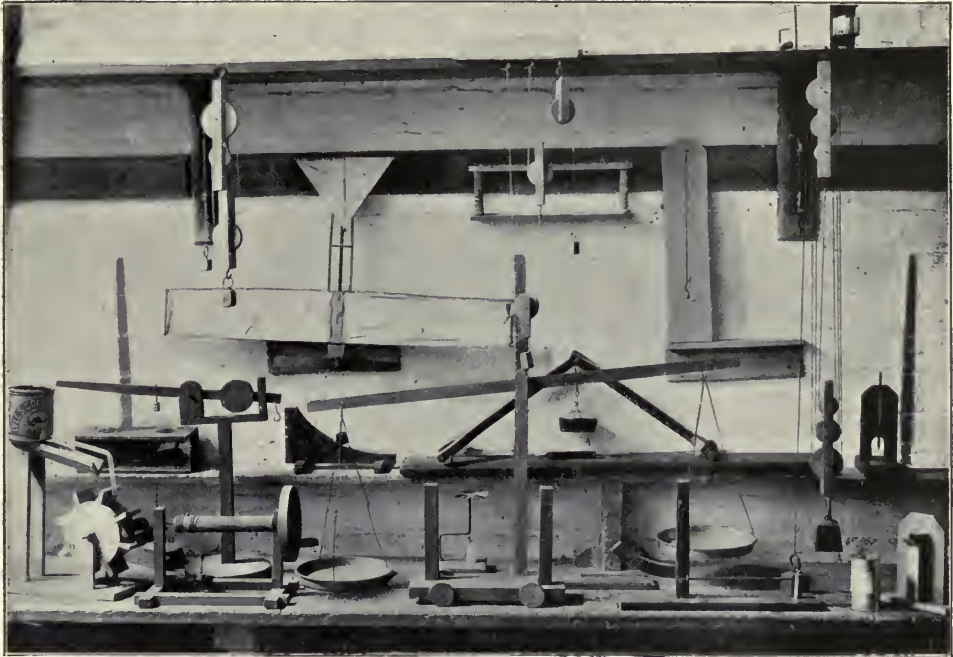
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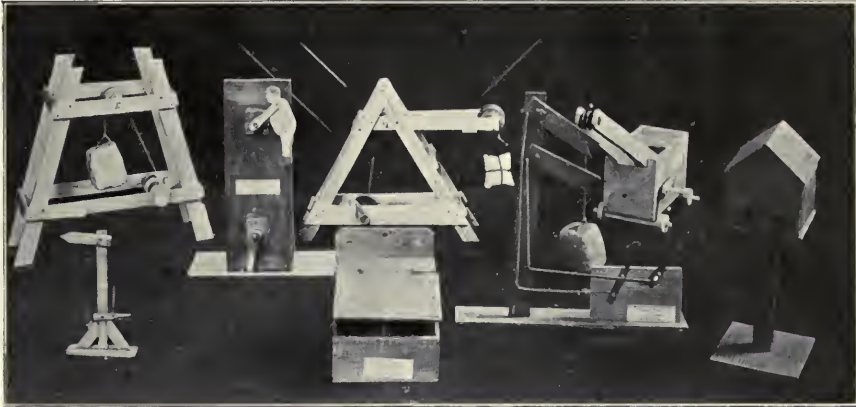
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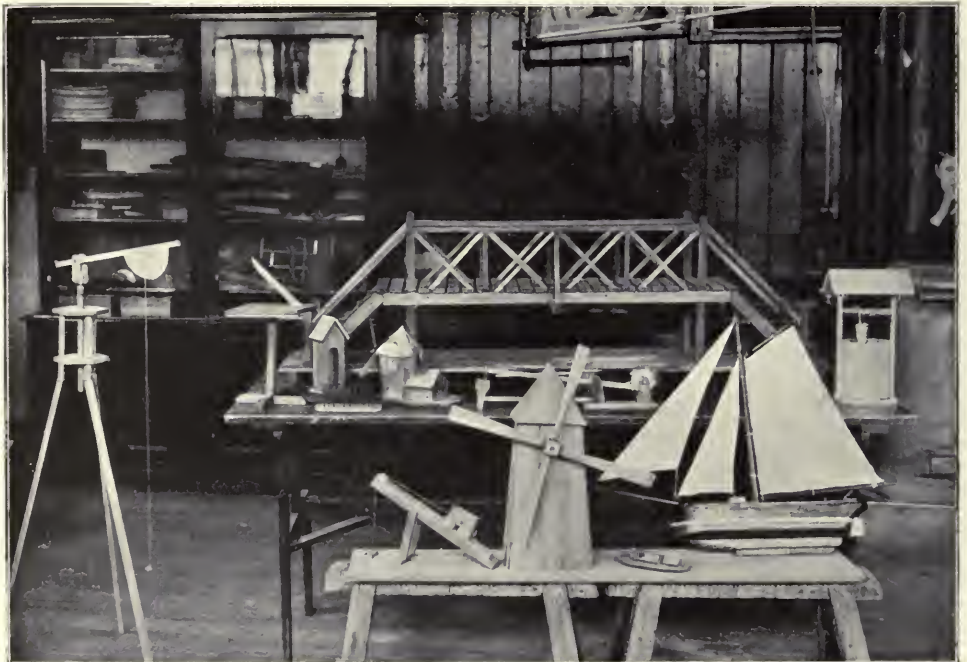
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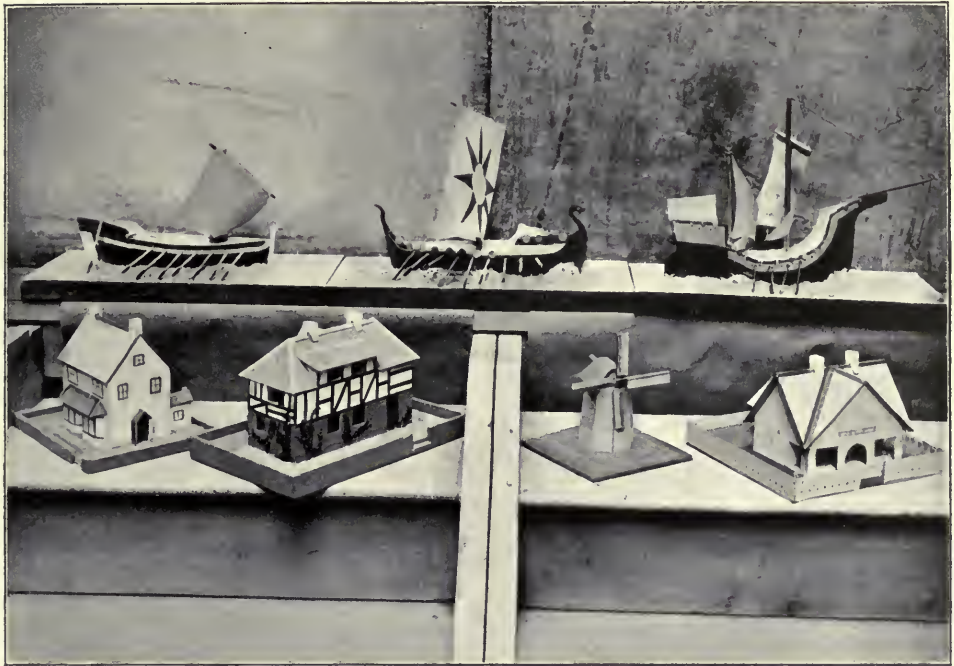
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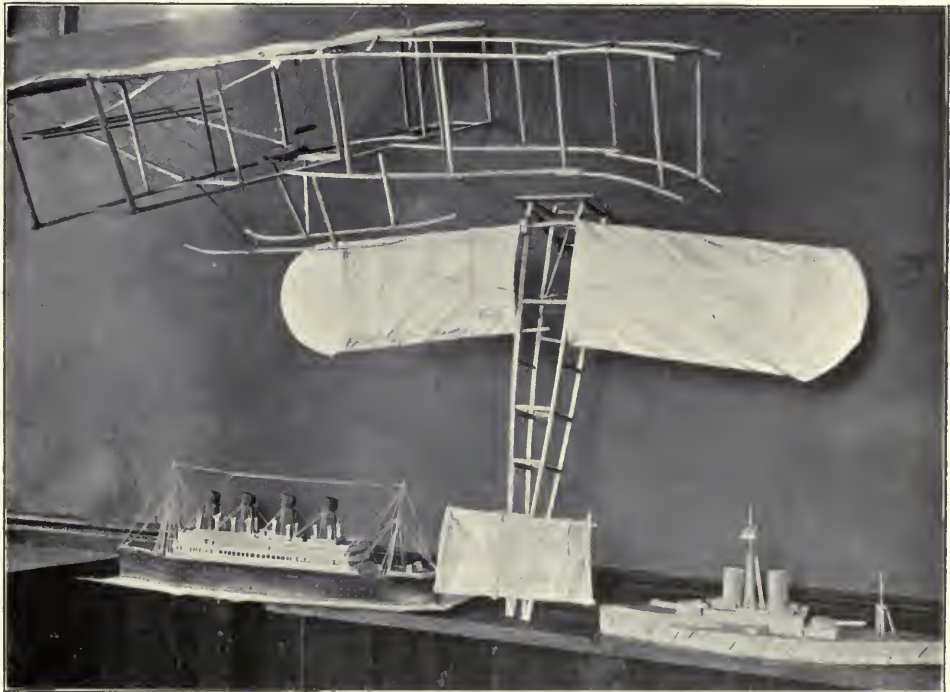
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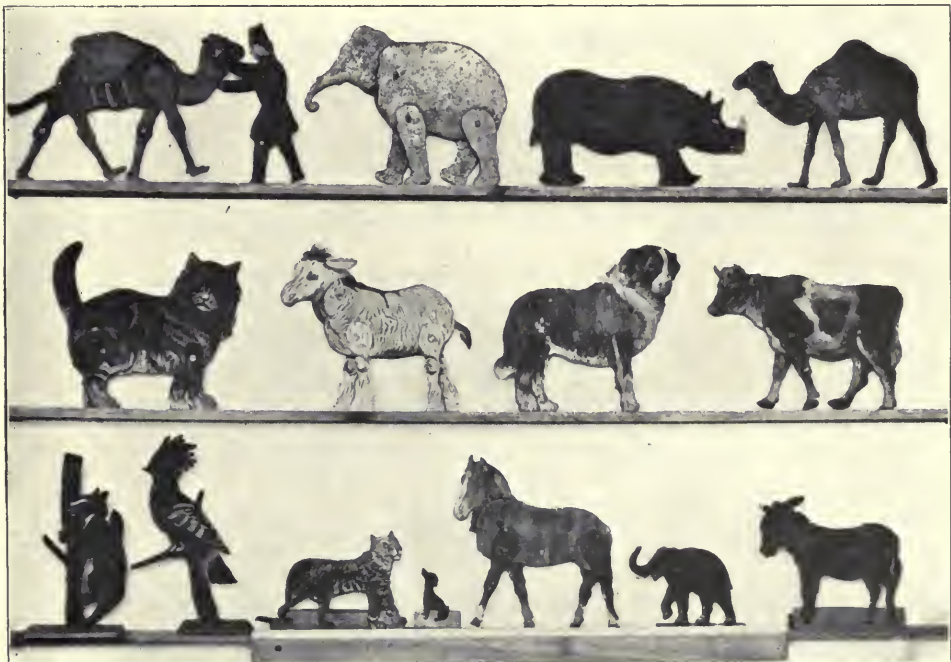
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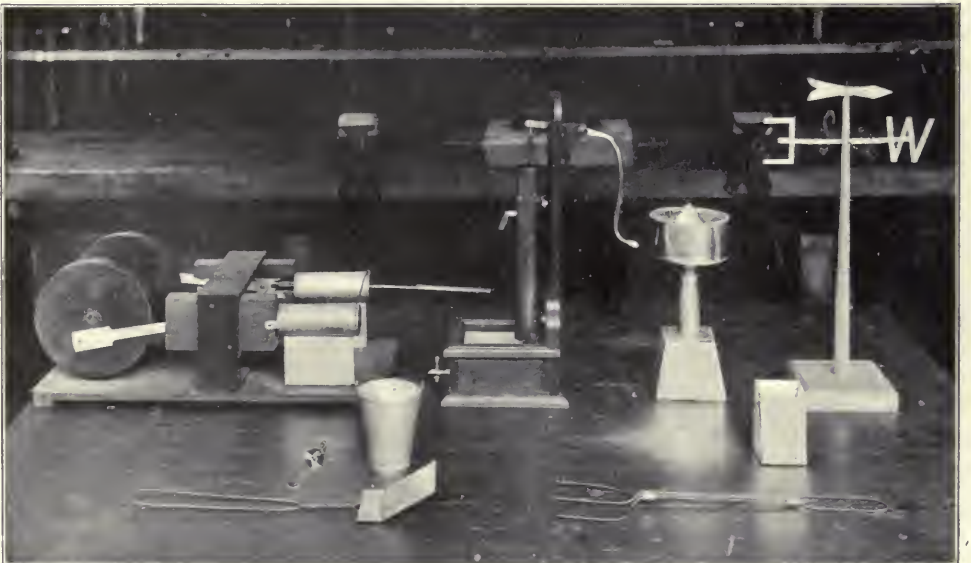
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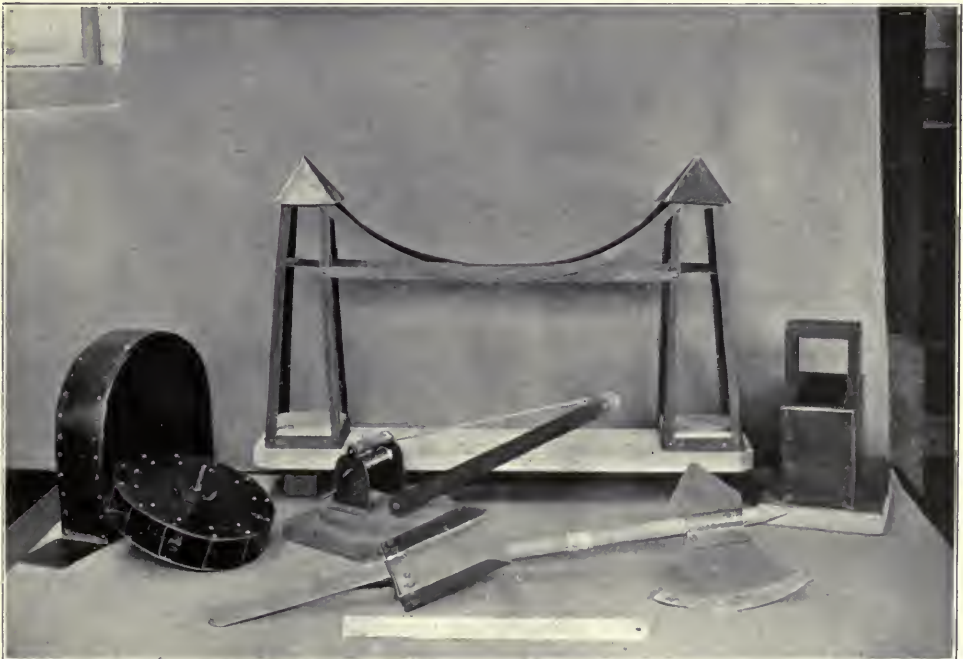
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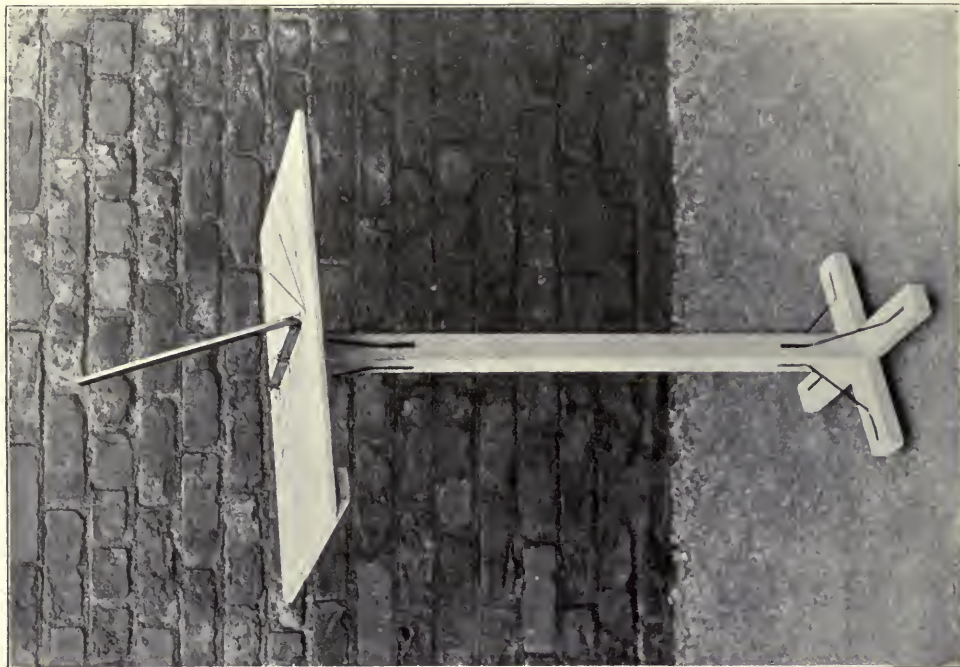
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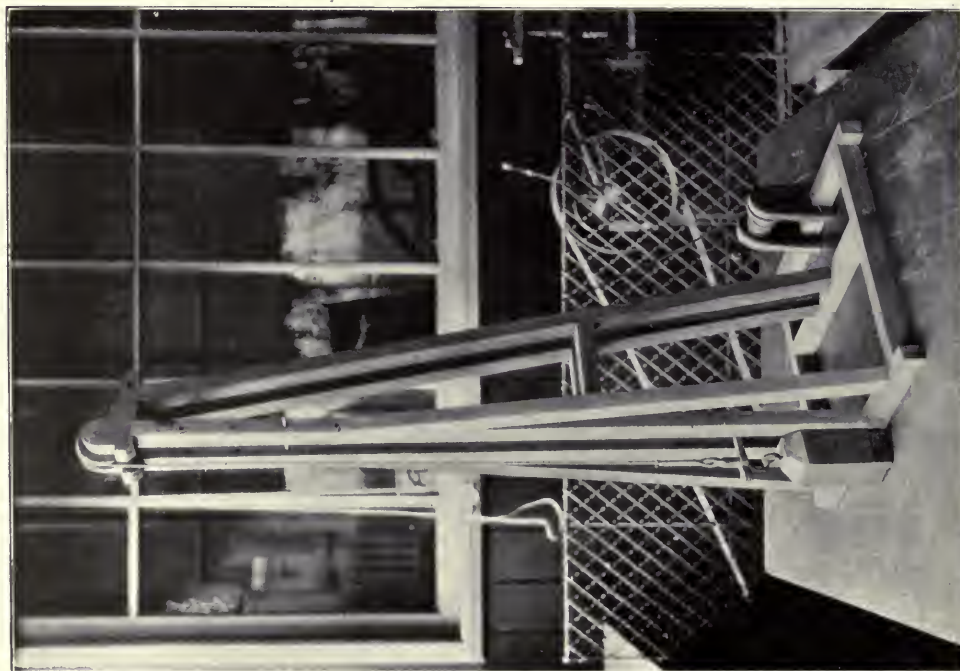
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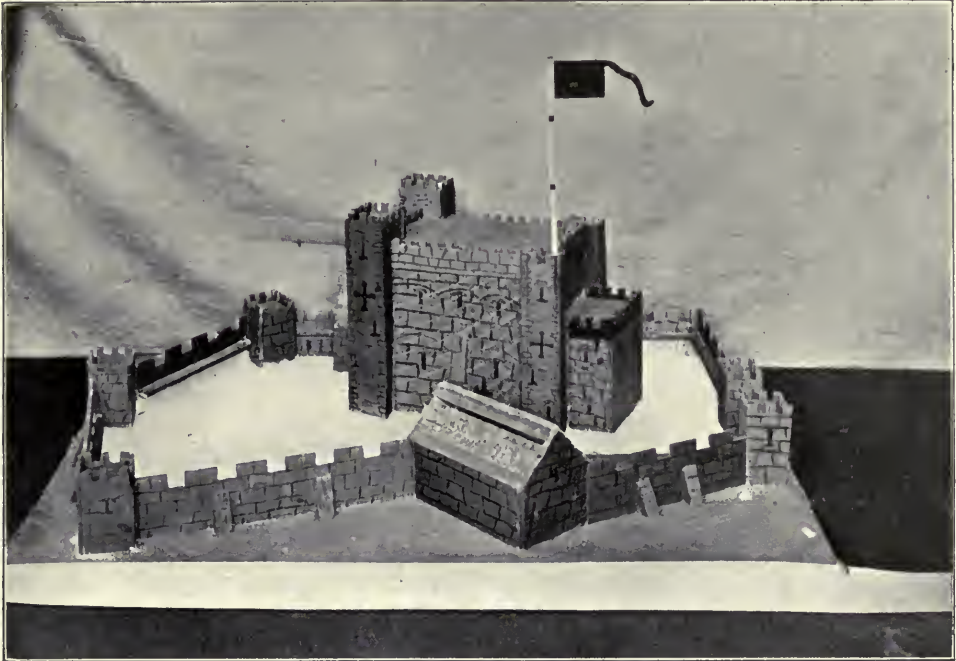
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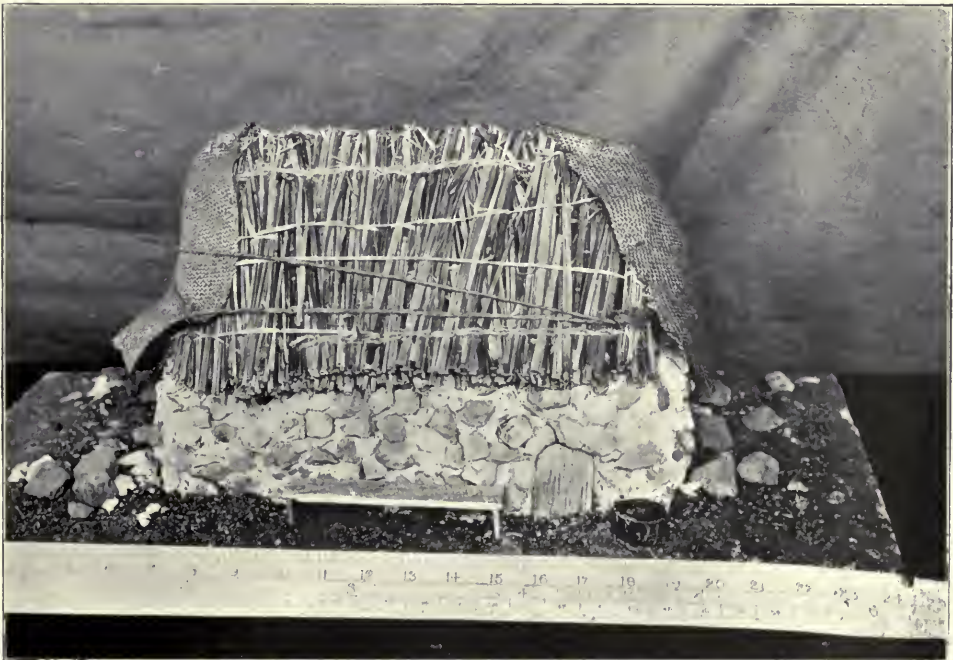
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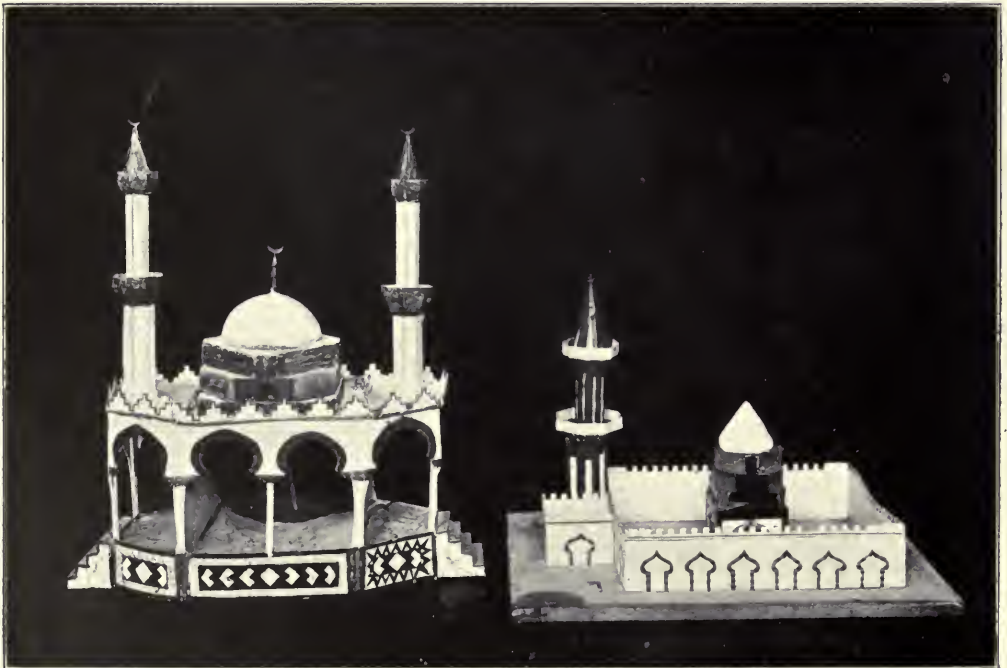
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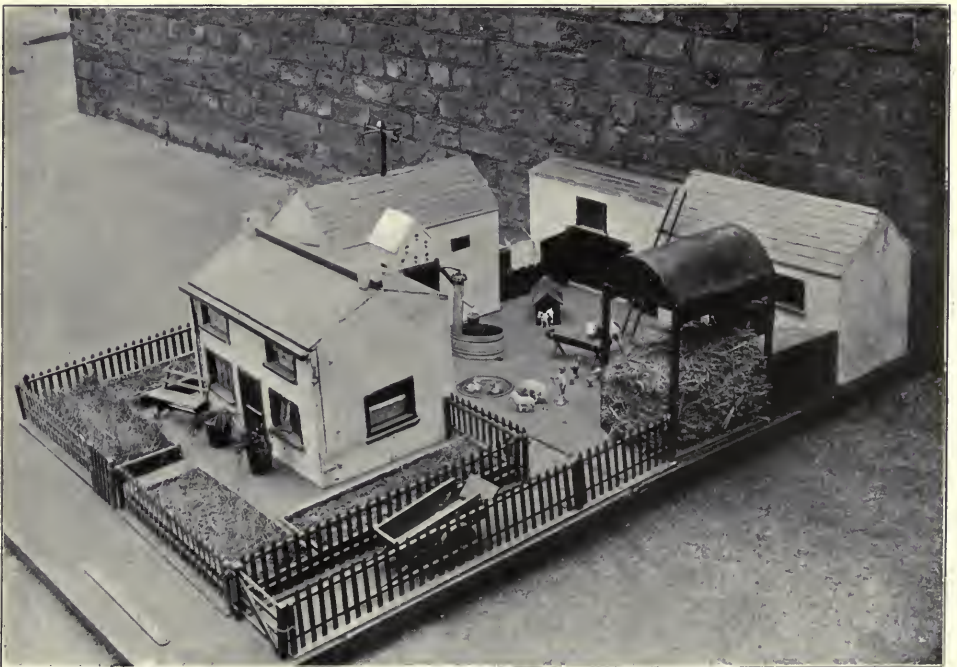
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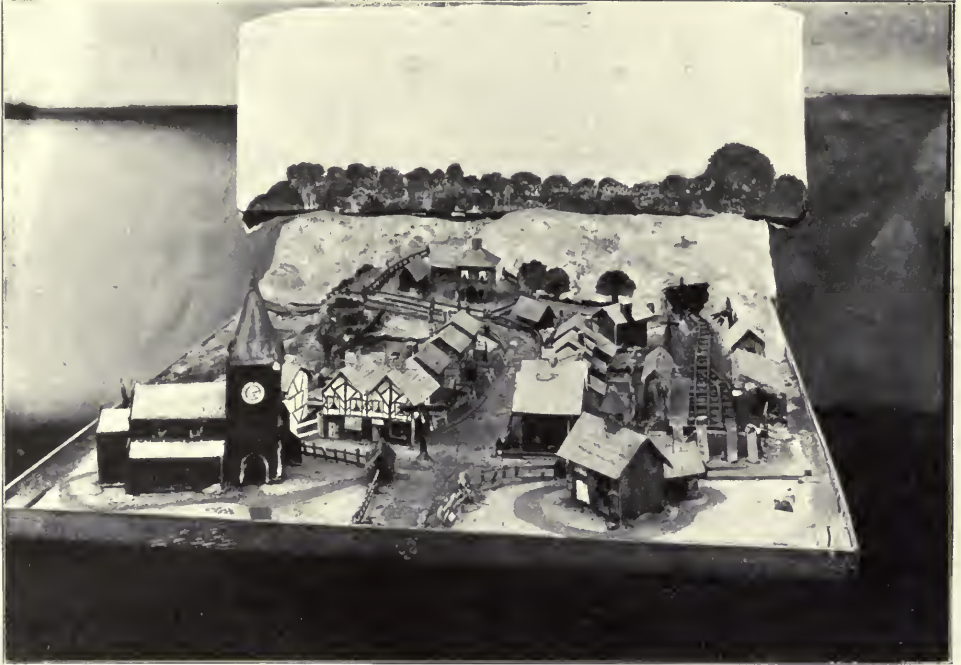
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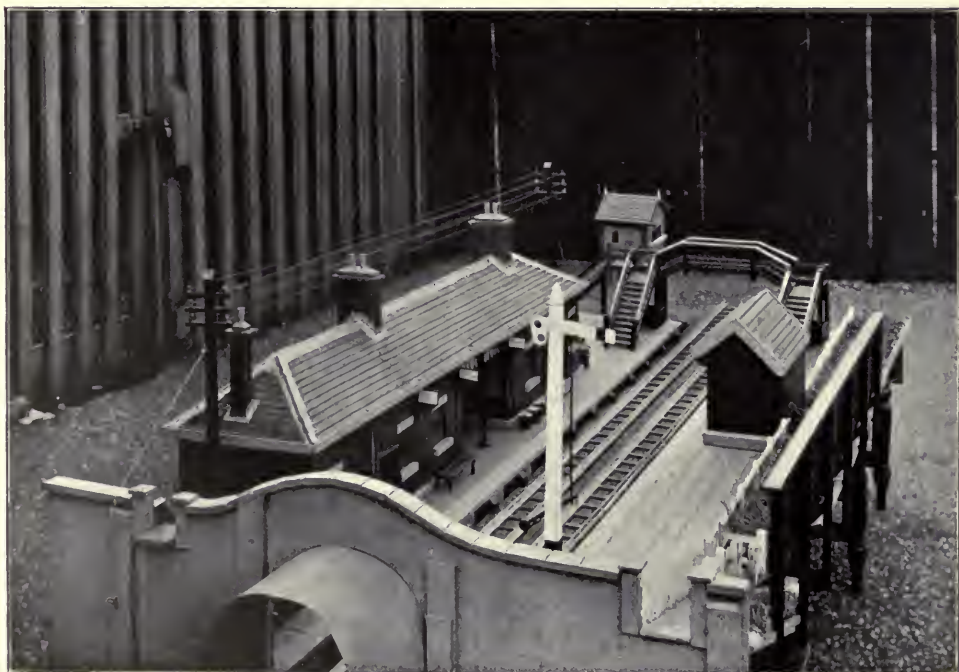


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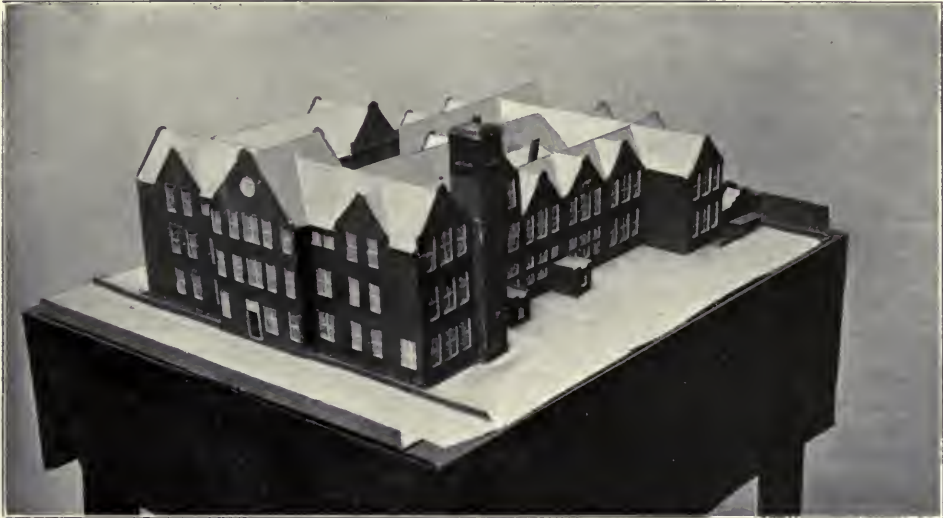
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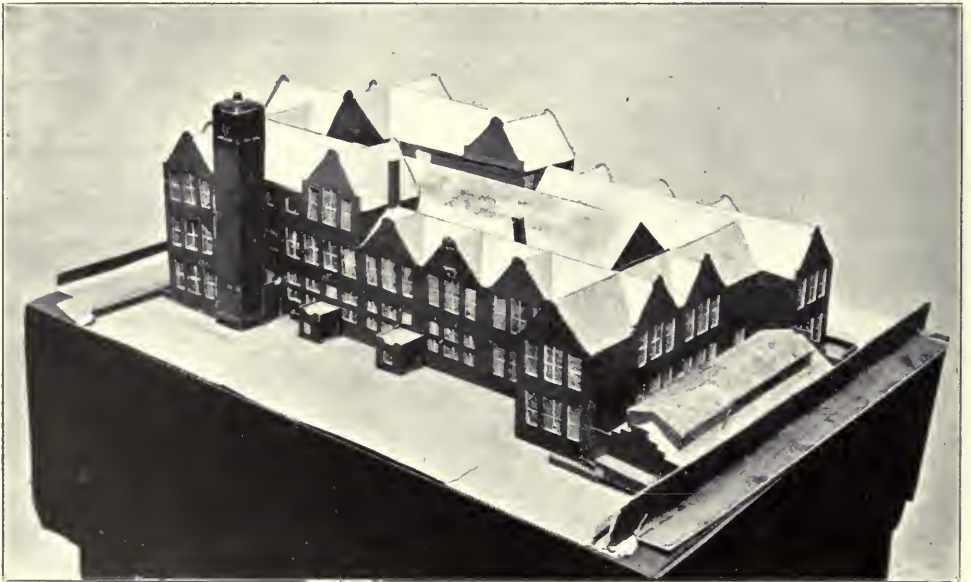


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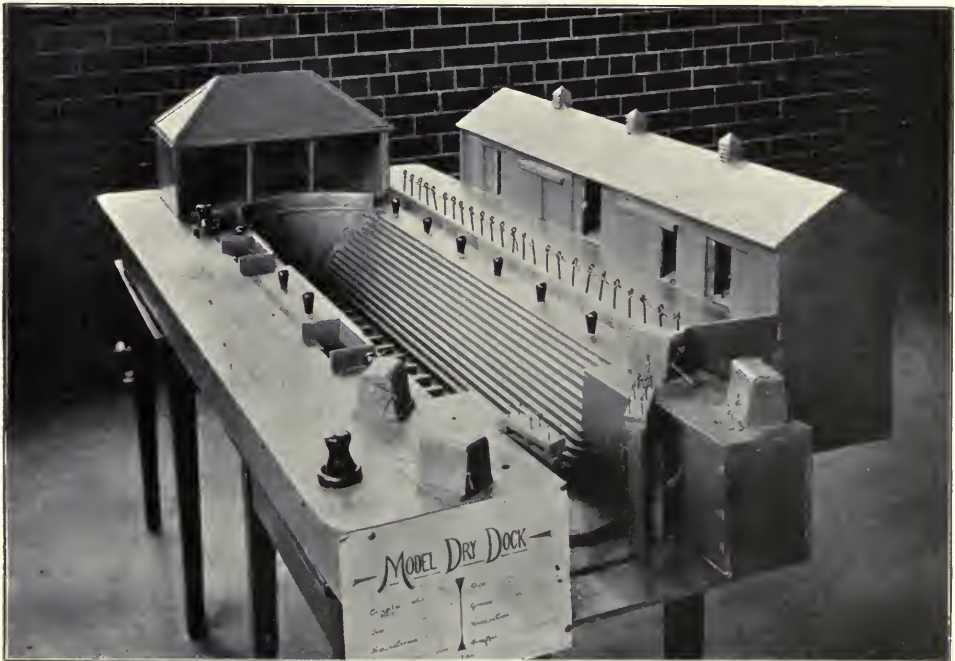
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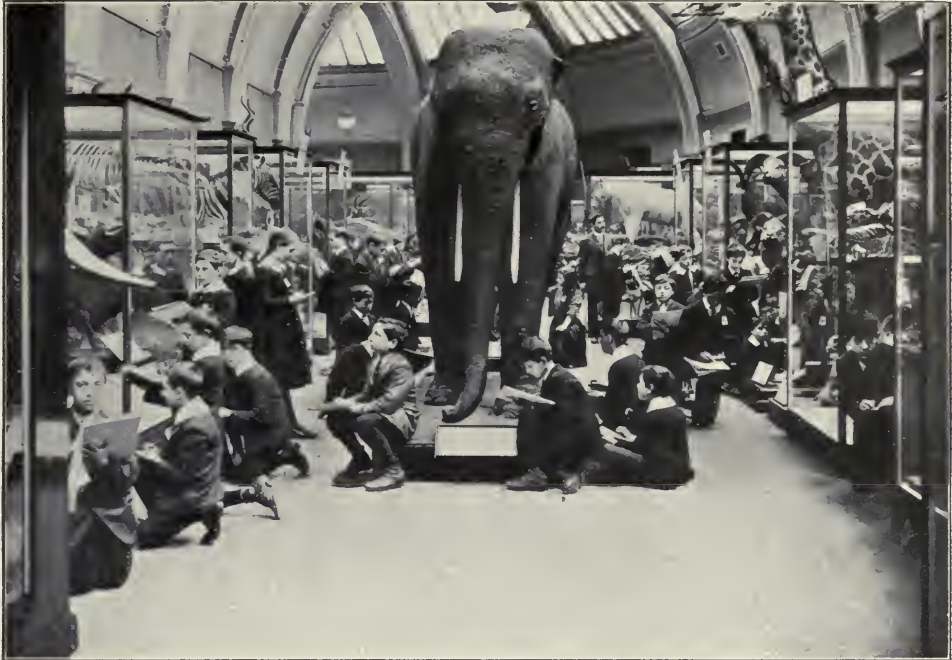
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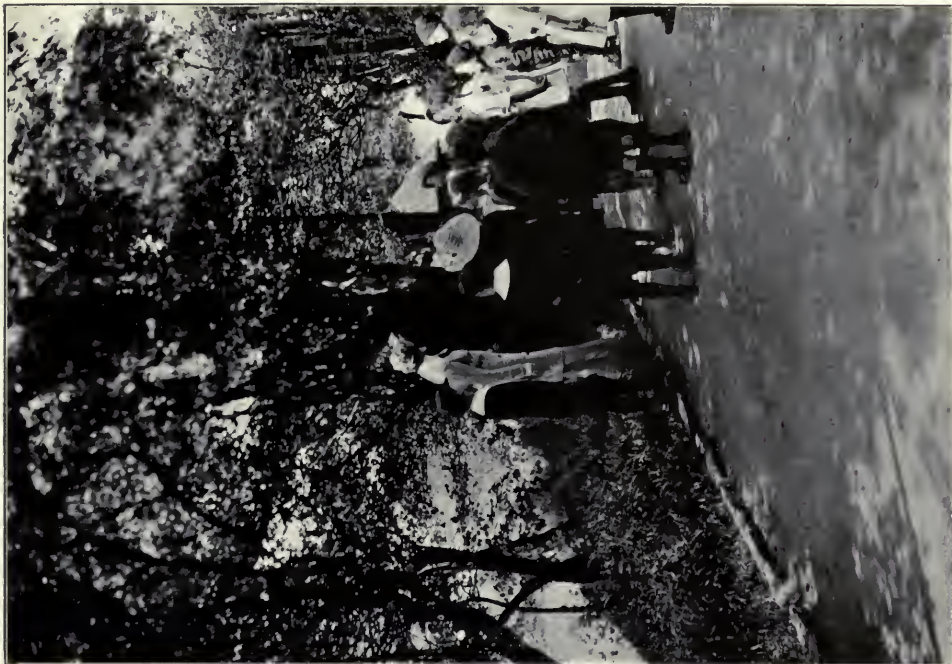
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