

**WOODWORKING - MISS ALLEN**  
Grades 3, 4, 7 and 8.

Two Weeks, ending Jan. 15-04

These grades spend two periods of one hour each in the Woodworking room every week. It has been the practice each year in all the grades to begin work in the Autumn by the making of Christmas presents. (See pages 21 & 22 in the Course of Study). This plan has grown out of the desire of the children themselves. No work in the department is undertaken with so much enthusiasm and is so rich in results from the standpoint of the pupil, the parent and the teacher. The making of these gifts stimulates the inventive faculty, gives free play to individual tastes, while the interest of the children in making them "the best they can" from the preliminary drawings to the finished article demands careful attention to detail, and develops a technique of surprising excellence.

**THIRD GRADE:** Average age, eight years.

This grade has thirty pupils, fifteen boys and fifteen girls. It is divided into two groups, the basis of division being that of number, not of sex. At the opening of school it was found that wooden portfolios were needed for immediate use in nature study, and the making of these was therefore the first problem in the shop, the children working zealously to finish them in order to begin making their Christmas presents. The remaining 12 lessons will be devoted to (a) the making of furniture to put into "unfurnished doll-houses" left by Santa Clause; (b) the making of bill clamps and kitchen lists. These are "by request" from people at home who received them as Christmas presents and wish others to send to admiring relatives. These requests for duplicates, while of value in making the child feel that his present found a real use and was appreciated would nevertheless be of comparatively small advantage if they were allowed to make merely a copy. Instead, the effort is to produce another bill-clamp or kitchen-list out of different wood, bring in new considerations as to color, grain and design.

**FOURTH GRADE:** Average age of pupils, nine years.

There are thirty-two pupils in this grade, sixteen boys and sixteen girls. The class is divided into two groups. The first two lessons, reviewed use and care of tools (see 7th Grade). It was planned that the last ten lessons should be devoted to the making of bird-houses. It might be well to explain here just how bird-houses have come to be an interesting part of school work. Two years ago the two neighboring parks (Jackson and Washington) lost nearly three hundred trees in a single season. It was known that the trees were killed by some insect. Two months later the Bureau of Agriculture published an account of the deadly ravages made on the trees by a certain insect and explained that the problem of overcoming these insects belonged to the birds rather than to man, and that the most direct way of meeting the solution was by the extension of a large hospitality to the birds. This report was seen by a Chicago woman who marked it and sent it to Mr. Foster, the Park Superintendent, who immediately sent word to Mr. Jackman, asking his co-operation. Mr. Jackman put the matter in the hands of the children, with the result that the children appointed

committees among themselves who in turn communicated with Mr. Foster. It was agreed that he should furnish nails and lumber and each child in the school should make and deliver to the Park a bird-house. The houses were planned from the stand-point of the bird, and after a due consideration of its likes and dislikes. On the appointed day the children at recess time met and marched to the Park, each carrying his completed promise. Mr. Foster and his assistants met them graciously and gratefully.

*peculiarly* From the first consideration to the completed house, this work was ~~practical~~ suggestive of problems all along the line, and the result was rich and lasting.

1. The nature-study department welcomed a civic need for the investigation of birds, etc.

2. The woodworking department was glad to have a strong and quick problem that was in reach of all the grades from a technical standpoint and was also unusually full of practical consideration.

3. The Park Commissioners were glad of the chance to put a small, but annoying piece of work into the hands of experts and thus accomplish without inconvenience to themselves an ~~annoying~~ *necessary* and imperative piece of work.

4. The whole school felt the immediate effect of this demand from the outside world - the children's pride in "filling the order" was apparent to everyone. Private households sent in requests for bird-houses which were gladly made. The children were not only interested students of birds, but became bird protectors. There has never been a request, for instance, to make a sling-shot, a demand which is as usual in many schools in Spring as the desire to make sleds in the settlement classes every Winter; and, best of all, this interest, this enthusiasm, has lasted over and served as a stimulus today as it did three years ago.

*In this grade*  
SEVENTH GRADE: There are 29 pupils, nineteen boys and ten girls - two groups, average age twelve and a half. *you* The department has been asked by many of the parents to give advice and assistance in the purchase of benches and tools to serve as Christmas gifts for children.

There are eight lessons before the close of this Semester. In view of the fact that many children received tools and benches for Christmas, it seemed appropriate just now to devote some of this time for class discussion as to what constitutes a good workshop. The children caught at this suggestion eagerly, and as much time will be given to it as is necessary for some definite conclusion to be reached. At present the class is considering the problem in parts: 1st, what are some of the essentials of a good workshop? 2nd, how far is it possible for the members of the class to have a shop that will include all of these essentials? Some of them? This discussion has brought out a feeling that all want a shop, whether ~~they~~ *we* can have all of the essentials, or some of the essentials, or none of the essentials. The problem has become a purely individual problem, the plan of the shop being dependent upon the conditions of the home life, for some live in flats, some in hotels, others live in hotels in Winter and have their own homes in the country in the Summer. After investigation as to how much and where the space ~~can~~ *could* be obtained at home, all have reported that something can be done, except one boy, and he wishes to make a plan for a shop that could be used in a school. In order that the pupil might know what tools and equipment to put in their own shops, we have begun in a systematic manner a careful review of our own equipment. I say "review" ~~meaning the use and care of tools~~. The class is

*because the use and care of tools always accompanies lessons in wood working*

now making an outline of the individual tools of each bench used daily by each child and of the general tools hung about the room, and used occasionally by the class. The two groups are divided into:

- 1st, the measuring, marking and testing tools.
- 2nd, edged tools.
- 3rd, tooth tools.
- 4th, boring tools.
- 5th, pounding tools.

The final work is a price list made out in terms that can clearly be understood by any dealer. This outline is corrected from the standpoint of writing, spelling, punctuation and neatness. The teacher will go over all errors made in the lists with the class, they themselves making the necessary corrections and rewriting them, so that this list will be in sufficiently good shape for their notebooks.

GRADE EIGHT: Average age, 14. There are twenty-four pupils in this grade, twenty-one boys and three girls. The class is not divided, the entire class coming twice each week. Woodworking with this grade was an elective, and each pupil came with a definite idea, that he or she wished to work out in the shop. For instance, one boy is constructing a waterwheel to be attached to a faucet for the purpose of running the family washing machine. Another is making a small boat and a paddle to be enjoyed next Summer. Another has designed and is now making a mahogany clock case, the case to be inlaid with copper. Several dictionary stands of various shapes and sizes have just been started, also tables, desk sets, including pads, blotters, trays and small wooden pockets for correspondence. One boy is making an ink bottle in the clay room which is to be fitted into a wooden frame or standard to be made in the woodworking room. Another has planned to make a serving tray with a wooden bottom bound about and riveted together by a copper rim. This rim is the most pleasing openwork pattern. Thus it will be seen that articles for their own use or articles requested by the home folks are being made, and it is found possible to allow this freedom and through it find fresh opportunities daily to introduce new and more difficult tool practice.



# WOODWORKING DEPARTMENT, MISS ALLEN.

Jan. 22, 1909..

## THIRD GRADE:

The making of dolls' furniture in this group is well under way.

The children have made a rough sketch of each piece. This gave them an idea of the amount of wood required.

The stock selected was bass and gum, 1/4" thick and both surfaces dressed, thus presenting two problems in wood of two dimensions, length and width. The planing of the surface being too difficult for children of this grade. The children have measured and themselves sawed from the board what they needed for their furniture - they have made the four edges of this wood true and upon these prepared pieces have pasted their pattern of their own design.

They are sawing their pieces out and preparing the several parts of their furniture to be nailed together.

## FOURTH GRADE:

The children have decided to furnish homes for the wren and the bluebird. The houses are to have roofs, both on the gable and flat order. All idea of a porch has been discarded because they are used too freely by the sparrows. The houses are true to the regulation as to size, etc. laid down by bird specialists. It happens that the dimensions of the houses permit an economical use of our lumber "scraps", being available for this work as in no other, and these "scraps" fortunately command a more careful and accurate planning than to cut from a large board. Pine is the selected stuff. It is soft, light, easily worked, especially adapted for nails and in the grade the children are making a study of the process of lumbering, the pine tree serving as a type.

## SEVENTH GRADE:

The plans for the work shop are growing in many directions. Out of some studios are being evolved in which all the crafts are represented: the loom, the printing-press, metal and wood benches and a clay table, with the appropriate equipment of each provided for. To do this and yet get sufficient light, ventilation, etc. is no longer a small problem. One father has promised his boy a shop made after his own drawing, "provided it fills the bill". With such a stimulus to the home shop, their popularity is growing.

## EIGHTH GRADE:

The work of this grade described last week is in most cases coming to a satisfactory close. The "finish" of a piece is always a matter of deliberation. The room has just the color of the other furniture in the room where this piece is to go; this is discussed and the stain made here to match. Some other pieces are to be "oiled", others will have a "wax" finish, and it is just the final decision that is now occupying the class.



## WOODWORKING - MISS ALLEN

Jan. 29, 1909.

### THIRD GRADE:

The children in this group have sandpapered their several pieces of wood and nailed the pieces together with nails suitable to the wood, observing proper spacing and the correct way of handling the hammer in driving the nails.

After the pieces were put together the furniture was finished by rubbing with fine sandpaper.

The kitchen lists and bill clamps have been completed. These were made true, some finished with rounded and some with square corners and some with a simple design made and cut out by the children. A list of "kitchen wants" was written on the wood in indelible ink by the child. By the side of each "want" he has bored with an  $1/8$ " bit a hole in which is placed a copper peg to indicate what is needed from the market and grocery.  $1/2$ " from the bottom of the board are eight  $1/8$ " holes where the pegs are kept when not in the want column.

The woodwork of the bill clamp is the same as the Kitchen list, but these are finished with a metal clamp at the top to hold papers.

### FOURTH GRADE:

The fourth grade have worked hard to finish their bird houses. In using our "scraps" of wood to advantage, some of the houses have turned out larger than is necessary for the birds chosen to be housed, - that is, the robin and the flicker have been provided for in several instances, instead of the wren and blue-bird. The children have derived much pleasure from this work. The actual putting together of the several pieces to form a real house has been an instructive problem to work out. The size of the opening for the different birds has been a consideration of great interest. Some of the houses are to be taken home by the children. Some are to be placed in the school garden when the proper time arrives, where we can watch them and take note of any desirable improvements in bird architecture for future use.

### SEVENTH GRADE:

The seventh grade workshop plan is about finished. The pupils inked their drawing, and are preparing necessary margin notes. More time might have been profitably spent on this plan, the pupil working out such details as chimney, fire place, cost of material, etc. Another parent has turned over the second story of a new garage to be finished according to his boy's plan made in school.

### EIGHTH GRADE:

Pupils have worked out the problem of "finish" satisfactorily. The children who have passed to the high school have done creditable work in woodwork.

The material in all grades is paid for by the children.

## WOODWORKING---MISS ALLEN

Feb. 5, 1909.

### GRADES 5, 6, 7, & 8.

FIFTH GRADE, two groups, two meetings one hour period each.

29 pupils, 15 boys, 14 girls. Average age 10.

SIXTH GRADE, four groups, two meetings each week, one hour period.

52 pupils, 32 boys, 20 girls, average age 11.

SEVENTH GRADE, one group, two meetings a week, 45 min. periods.

14 pupils, five boys and nine girls. Average age 12-1/2.

EIGHTH GRADE, one group. Two meetings each week, one hour mer meeting. 25 pupils, 20 boys and 5 girls.

All grades are making a study of tools. This study involves:

1. Metal used in the manufacture of tools.
2. Woods used in mounting the tools.
3. The particular use of each tool.
4. The parts of each tool.
5. The relation which each part bears to the other.
6. Price list of tools.

The price list gives an opportunity for careful work in writing, punctuation, spelling and form. The price list must come up to business standards in all respects. Bills and invoices from various large firms in the city serve as a basis for comparison. When the bills are satisfactory and completed, the form will be given to Miss Stilwell, who will have the children in the print shop make blanks for use as ordering slips for the department and for individual children who wish to order tools.

Just as the children in the beginning make an analysis of tools, finishing with a price list, so before they begin the article, construction of things in wood, they will make out a requisition for the lumber they require. This order, too, must meet the definite demand of the lumber merchant. In the analysis of lumber we have a happy opportunity for basis of selecting the appropriate kind of wood needed for the particular thing which the student is to make. We have eleven different woods, thus giving a wide range of selection.

In contrast to the work of last semester, when the children made Christmas presents and the articles were for individual pleasure and use, the work this semester will be based on the needs of the garden, the school, the school class room, or the shop, and many articles will be made by small groups of workers. In the Spring months the Nature Study Department makes demand upon the department. There are things needed for the garden, Flower boxes needed for the class room, as well as bulletin boards and book racks and book cases. In the woodworking room some repairs are needed and various pieces of shop equipment will be made by the classes. To illustrate, instead of buying bench pegs (regular rectangle pieces of wood, which fit into holes made in the bench, thereby making a device to hold or clamp wood), each child will make his own. We need twenty bench platforms. These platforms vary in height from two to six inches,

Woodworking - #2.

and are made to fit under the benches. They are easily pulled out and used by the children not otherwise tall enough to work at the bench without standing properly. Trays for gouges and carving tools are needed. They will be made to fit into braces in the lockers, like a drawer, and yet may be pulled out and serve as a tray when the tools are used on the benches. While these are simple in construction, they yet demand such careful measurement and accurate workmanship that if thoughtless calculations are made in the laying out of the work, the result is all wrong. This work for the school will be made in some cases by individuals. In other cases by a group with a working foreman selected by the group. The foreman or forewoman being one who is recognized as careful, deserving and with the necessary ability to plan. Cooperation of this sort has always resulted in interesting and careful work. When the school demands are filled, the remaining time will be devoted to personal and home orders. Some plan to work in furniture for their summer home camps, such as making porch tables, stools, book cases, etc. Before this is undertaken excursions to furniture stores will be made, and furniture catalogues consulted and then will come the sketch for the sake of proportion, and this reduced to a mechanical, or working drawing. Some of these drawings will be done in India ink so that blue prints can be made. All the way along, from list of tools to the making of the blue prints, the work grows more difficult and levies upon a progressive ability, but it reaches out in so many directions that new interests are daily aroused and it is upon their interests, especially in the eighth grade that we rely for the development of a growing power in the use of tools.



Miss E. E. Langley

Feb. 12, 1909.

The 5th, 6th, 7th and 8th grades have finished their analysis of tools and, after strenuous efforts, have made a price list that has finally been accepted by both grade and special teacher. The price list has been given permanent form in the note book. The making of a correct and business-like tool order, where each word or sign stands for a certain manufacture, style, and quality; the control of technical symbols daily used and understood in the world of affairs has lent both dignity and importance to the tool work. For instance, here is one symbol:

Disston 24, 11 pt. C. C. saw ----- \$1.25  
translated, reads:

Disston cross cut saw, twenty-four inches long, fine, or, eleven teeth to the inch. This saw, in many catalogues, is represented by a number. To have a pupil first feel the pleasure of a good tool, compare it with a tool which works less easily, learn to discern the qualities essential to a good saw - namely, length, balance, flexibility, set, and sharpness, then to learn that these factors are recognized in the commercial world and form the basis of cost: then again to be able to use a symbol which stands for all this, gives to the pupils' work a sense of reality.

Although the consideration of lists and the insistence upon correct spelling, writing, order and form may seem to come outside the realm of manual training and even to subtract unduly from the time set apart specifically for woodwork, yet the gain in mental discipline and in the very qualities woodworking aims to develop, such as attention to detail, definiteness of purpose and accuracy of statement is so great as to actually save time in the end. The apparent loss in time is a real gain in power; furthermore, experience shows that in woodwork, whether in the grades or in the college more mistakes arise from faulty measurement than from faulty manipulation of tools, and any sort of discipline that goes in the direction of accuracy is to be

another sort of gain from the studying and making of lists is that it throws definite "films of connection" between the pupil and the outside world.

The making of lumber lists involves the following steps:

1. The choice of article to be made.
2. The discussion of the kind of lumber (with eleven kinds to choose from) most suitable for this article.
3. Amount needed.
4. The making out of a correct requisition.

In discussing these points, the following topics arise:

1. The durability of different kinds of woods, depending on elasticity, density, grain: with attention to the fact that some woods are durable for some purposes and not for others: Impregnation, the artificial hardening of certain woods for railroad ties, etc.: seasoning (air dried and kiln dried).

2. A study of wood from the point of view of beauty.
3. A quick recognition of wood through color, grain, weight, odor, texture, etc.

4. A knowledge of lumberman's measure.
5. Finish of which various woods are susceptible, and finishing agents and tools.
6. Cost.

This outline, with the practical considerations it involves, will, probably cover one month's work. The weekly notes will therefore be a statement of progress (?).

WOODWORK - (MISS E. E. LANGLEY  
(MISS ELIZABETH ALLEN

*Feb. 14, 1909.*

All grades have been working on the outline submitted last week. Some time has been spent in drawing, taking up the placing of the paper on the drawing board, use of T-square, triangle, etc.

The 5th and 6th grades made a drawing of the try-square on the desk. The 7th grade are making a drawing of the cutting board.

The 8th grade have chosen and made a free hand drawing of the article which they will make. Considering the points covered in a previous outline.

*W. E. L.*



WOODWORKING ----- MISS ALLEN.

Feb. 26, 1909.

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The lists which the children are making are not yet completed, progress being interrupted by frequent discussion which is bringing valuable information to the class. Meanwhile in order to lose no time we are making working drawings. The first drawing is of the try-square. The try-square as a tool is in constant use, and its lines are simple. It makes an excellent mechanical drawing problem, - one tool which as the drawing progresses develops the mechanical use of the try-square.

The FIFTH AND SIXTH GRADES have completed theirs. They have also selected the wood and cut out in the rough their bench pegs (see outline Feb. 5th). The SEVENTH GRADE have finished the mechanical drawing of the cutting board, - a drawing which introduces elementary technical problems. They all decided to use the scale  $1/2" = 1"$ . The EIGHTH GRADE work is progressing. The individual problems which include a fireless cooker, mahogany picture frame, etc. an order from the kindergarten the moulding boards.

WOODWORKING - MISS LANGLEY.

March 5, 1909.

The two enclosed bills are typical of the revised lumber requisitions which are coming in from all the grades. The eighth grade boy has framed his requisition in a regular form, handing it in with an air of business which is brand new. The girl was demure but conscious that she had done a careful thing. The other orders are pinned up about the room as fast as the pupil feels he is ready to have his work criticised. Around the room also are bill forms from large lumber yards, hardly any two alike. We are simply trying to find a convenient, simple form by which we may express the thing we have in our mind.

Wood-working - #2.

The enclosed outline of the bench peg, with the sketch gives an idea of the simplicity of the device on the one hand, and the necessity, on the other, of conforming to proper measurements, simple though they may be, else the bench peg will slip through the squares ready made for them, in the top of the bench. The value of the peg would be lost if both ends were the same size, and it requires care, in a range of four inches, to graduate the necessary  $1/4$ ". Rectangular objects are more difficult to make than those which demand a curved or broken line.

The regular work as outlined two weeks ago, is moving along in the direction planned.



2

Bench-peg

Article	Wood	Size	Use	Cost	Exercises	Tools
Bench-peg	Pine	1" x 1"	By means of pressure		measuring	Rule
	oak	one end,	to serve as		squaring -	try-s
			a second		testing	tip-s
	gum	x 4" x 7/8"	stop or brace		ripping	back-
	chestnut	x 7/8" other	against which the		cross-cut	1" ch
poplar	end		piece of work is pushed and thereby held in place or clamped on top of the bench.		sawing	smooth
					end-chisel-ing-	plane
					straight-	Wood
					planing	malle
					pounding	
					in bench	

WOODWORKING -- MISSES ALLEN & LANGLEY.

March 12, 1909.

FIFTH, SIXTH, SEVENTH AND EIGHTH GRADES:

The children have made the bench peg according to the outline submitted last week.

The fifth, sixth and seventh grades have chosen and made a sketch of the article which they are to make and this sketch has been reduced to a working drawing. The pieces selected by the children include articles for the school room, the home, and personal use, - see report of February 5th. In the selection, proportion, beauty, usefulness and cost are considered.

The work of the eighth grade is moving steadily forward, and most of the class show great interest in their various problems.

Report to March 19th.

*and Miss Langley*  
*Mar 29th to* April 9, 1909.

Many of the children have completed their individual problems in wood and are now applying the various preservatives or finishes appropriate to the use etc. of the article. To mix just the shade required to match with some other piece of furniture at home or to fit harmoniously in a certain room has been an interesting and careful performance. The process has demanded careful observation and thoughtful work. It has united the interests of the child with home conditions and levied upon the furniture shop, as a valuable contributor to the cause, for its array of glossy and dull furniture; its real and imitation pieces, its simple and ornate pieces have been quickly judged and commented upon by the children. It is safe to prophesy that when these children become home-makers, better judgment in the selection of furniture will be shown than is apparent in many of their own homes today.

It has been interesting to watch the growth of their appreciation. The grain has changed with almost every touch of the tool, and the oiling, staining, waxing, varnishing, rubbing, according to their plan, has finally made of the original rough board, a smooth and glowing article of value. They have noted that the same stain acts differently on different woods, but it was somewhat of a surprise to realize that the same stain also brings about different results on the same wood, the grain and not the stain, being responsible for the different appearance (See outline Feb. 12, paragraph 4.) This observation of the difference in grain as shown in the stained piece has whirled around in an irresistible fashion to the cause, to the growth of the tree itself, the peculiarities of growth, the wet and dry seasons, etc. being directly responsible. It is the child's realization of this, his pleasure in again meeting an old fact in a new dress, the surprise in being confronted with a fact that belonged to his study of the forest and the rough board, and yet is photographed even more clearly in this finished piece, which is so far removed from the beginning work, this round up of thought, that shows the development of ideas, and strengthen the filius of connection between, say a book rack on the library table, the woods.

In the present class, this realization seems to have suddenly burst upon the members who first reached the finishing stage. Their enthusiasm immediately showed itself in their desire to rush to every bench in order to inspect the grain in the articles other children were making. They wanted to air all they knew. Their enthusiasm was a tonic to the class and has spurred them on to make haste and finish in order to compare results. Even parents have been brought in to see the original board from the lumber rack to compare it with the finished piece, as a sort of proof of the transformation. One boy, considered "impossible" by the public school, has come to the School of Education and through work in the handicrafts, has become interested in all his studies. He nursed his finished piece with admiration and tenderness. The teacher observed that he had it wrapped in a handsome linen handkerchief and upon speaking to the boy about it, he said, "Father could afford to buy another handkerchief, but money couldn't buy a stand like this." It was the first time he had ever finished anything.

WOODWORKING -- MISS LANGLEY & MISS ALLEN.

*April 9th to* April 23, 1909.

With the spring has come responsibilities of various sorts. The garden demands stakes, seats, arbors. The domestic science, nature study and woodworking departments are uniting on some of these problems. For instance, we wish to make grape jelly. We wish to grow our own grapes. We must therefore break ground, prepare the earth and build the arbor. In this case, the arbor is to be a pergola, and the children are at work on plans. They have been consulting books and magazines for suggestions, which must be reduced to come within the \$12.00 limit of expenditure. The problem is practical and interesting and next week the children are going to bring plans and specifications for the arbor, as well as a requisition for the required stock. Only a few, however, can do the actual work on the arbor, so others have different plans which will be given in detail later.

## WOODWORKING -- MISSES LANGLEY & ALLEN.

Two weeks' report, ending May <sup>7</sup>~~11~~, 1909.

Any attempt at a weekly report at this season seems in the reading like a re-statement of the same activities, but these activities as the day go on reach out in many directions and discover, by the way, the kindred interests which grow naturally in the same garden. Nature study, domestic science and wood-work are plunged headlong into cooperative work with the coming of Spring, and the garden is a common ground of endeavor. Not even the making of Christmas presents in the autumn quarter, with work which throughout the school has always been characterized by its excellent quality as well as by its enthusiastic zest, excels in its appeal the work which comes with the spring fever. The whole school is working in the garden, and so, all members of the classes in woodwork have responsibilities there. Today it is stakes, tomorrow a trellis, and finally came the pergola, which stands today a simple, dignified, well-proportioned structure with a trellis on each side, and small vines planted about. It is stained a soft brown. The entire statement can be made in a few sentences, but the detailed planning, the attitude of the children toward it, their careful work, the many questions asked and answered, would take many pages, and still be inadequate, for the larger value, the record of individual growth, the development of the power to actually grasp a problem and then proceed in definite progressive steps to solve it; the gain which has come to individual children is impossible to make clear, on paper, even though it is evident to those who look on.

Some of the simple processes in the making of the pergola which may be easily tabulated are:

1. Location of pergola.
2. Design of pergola
3. Height of pergola.
4. Size of stock which such proportions demanded.
5. Depth at which posts should be sunk in order to sustain the height, etc.
6. Number of roof pieces required of a certain dimension.
7. Placing the trellis.
8. Staining
9. All of these considerations to be modified by the financial limitations.

In their efforts to get definite information, the children, outside of the class-room have enlisted the services of parents, friends, two or three architect relatives, and became introduced to many illustrated books and magazines. To watch them compare, and discuss the various drawings and pictures of arbors, pergolas etc. found in these books was no small pleasure. And now that the pergola is done, to see them again look at these pictures with a critical eye, denotes a sustained interest. Bringing the outside world into the class room, and fastening to the smaller problems which necessarily belong to tool manipulation enlarges the whole scheme, and carries it along with apparent pleasure.

But garden work cannot keep the hours full for all, and so we have canoe paddles, bows, tools, stools, etc. for the furnishing of summer homes or tents; apparatus for camping outfits,



camera cases, and the many little articles which those of smaller interests wish to make. The water wheel which the eighth grade expected to finish in one month has grown into a complex piece of mechanism which is built in a frame of walnut, has a large zinc wheel with ears or cups, brass mountings and keeps him busy at noon and after school. He will need to work hard to get it done in June, but in the process he and his plan have grown together, and the wheel of today is quite a different thing from the original plan.

WOODWORKING - MISSES ALLEN & LANGLEY.

May 14, 1909.

All grades have been working on the last outline submitted. The children are sand-papering their pieces of wood, nailing or screwing them together, as the article may require, and considering the matter of the finish. With this they take into consideration the coloring of the room, furniture, etc., where their piece is to be placed. Some pieces are oiled, others are to have a wax finish and it is just the final decision that is now occupying the class.

WOODWORKING - MISSES ALLEN & LANGLEY.

May 28, 1909.

The work in all the grades is moving steadily forward and by next week the finishing of the different pieces will be under way - and a report in full will follow this final work.