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A YEAR'S WORK IN INDUSTRIAL ARTS, THIRD GRADE SPEYER SCHOOL

BY

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A YEAR'S WORK IN THE INDUSTRIAL ARTS THIRD GRADE, SPEYER SCHOOL

Introduction

In "The Child and The Curriculum," by John Dewey, we find that the child has certain impulses, needs, and the machinery to work with; society has certain requirements. The wants of the child should grow into society's wants and purposes; there should be no break or opposition between the child and the curriculum. In attempting to make vital the subject matter of the Third Grade, we have tried to follow the needs, interests and activities of the children. This has led to the prominence given to Industrial Arts, because this subject brings in, on its content side, a field of knowledge which reaches out to all material human needs and activities, and, on the manual side, leads to greater clearness in thought processes.

As the following outline shows, present needs have been considered and in consequence the children are led to a better understanding of life about them. The problems are usually raised by the children themselves.

The projects chosen are those which aid in making clear and vital processes and subject matter in both the study of industries and other subjects. This is more clearly shown under the topic of "Motivation of Subject Matter by Means of Industrial Arts" in the closing pages of this paper.

In this brief outline of work there is no attempt made to give all of the problems taken up during the study of each subject, but rather to select those which are most typical.

Outline of Topics

I. Work in Textiles.
   - A. Sewing.
     1. Needle and pin books.
     2. Shoe bags.
     3. Cup cases.
     4. Costumes and articles necessary for staging Third Grade Plays.
   - B. Wool Study.
   - C. Comparison of Wool with other Textiles.

II. Work in Leather.

III. Work in Wood.
- A. Game boards.
- B. Looms.

IV. Paper Construction.
- A. Books.
- B. Portfolios.

V. Clay and Building Materials.
- A. Records.
- B. Pottery.
- C. Brief Study of New York City House Construction.

VI. Foods.
- A. Market Study.
- B. Milk Study.
- C. Preparation of Foods.

I. Work In Textiles

A. Sewing

1. *Needle cases.*

Early in the fall the class saw that they would have to find places for their gymnasium shoes, so they decided to make bags. In talking over the tools necessary to make good bags they found that it would be desirable to have something like mother's in which to put the pins and needles, and we began our planning for needle cases. The following are the most important steps in the development of the project: (a) choice of material; (b) making and finishing of case; (c) stitches.

(a) The various kinds of materials were talked over, and it was decided that a heavy material should be used for the cover and some material into which pins could be easily put and kept used for the leaves of the book. Art canvas was selected for the cover and flannel for the leaves.

(b) After the size and shape were determined, we found that the edges of the cover would look rough when cut, so the children thought of the blanket stitch which they had used in the second grade. The class soon discovered that the flannel was

not heavy enough for blanket stitching and instead the leaves were notched. Afterward the leaves and covers were tied with silkateen the color of the stitch.

(c) In review, or in teaching new stitches, we always used a piece of light weight canvas as a demonstration cloth. This was pinned to the side of the room and then with a large needle, threaded with colored wool, the stitches were shown. If, at any time, a child was doubtful as to the proper movement, the stitch was again reviewed from this cloth. The children first tried the blanket stitch on our demonstration cloth and then used the stitch on their book covers. The chief problem here was keeping the stitches equal distances apart and the same distance from the edge.

2. *Shoe bags.*

When we were ready to begin planning for our shoe bags, the main points discussed were: (a) material; (b) size; (c) kind of bag; (d) stitches; (e) marking.

(a) We collected a number of samples of material and after looking them over the children decided that goods chosen for the bags must be washable, not too heavy, and strong. The material finally chosen was a medium weight blue gingham.

(b) We measured the gymnasium shoes and thus determined the size of the bag. As most of the shoes measured were of the same size, the class decided to use the average size as a measure.

(c) When we came to a discussion of the kind of bag to be made, some wanted wall pockets, others wanted bags with strings. The class finally chose string bags as they would hang to the desks easier, and would be less in the way during free time in the aisles.

(d) The next question discussed was the kind of stitches to be used in making of the seams and hems. The basting stitch was first used, and then the running stitch with an occasional back stitch was chosen for the seams and double hem. All stitches were first developed on the demonstration cloth.

(e) As a means of identification, the children suggested placing initials upon the bags. Each child did his own designing of his initials, deciding on size in relation to his space on the bag, and then transferred them to the bag. The chain stitch was then developed and used to outline the letters in white silkateen.

3. *Cup cases for individual drinking cups.*

These cases were made as individual Christmas presents for the fathers. The class discussed the reasons for individual cups and the best ways of carrying them. A case was finally suggested and then the question to be decided was the kind of case and quality of goods. A book with two pockets was made and canvas was used. The blanket stitch was used around the edges, each child choosing his own colored floss from the table.

4. *Costumes and articles necessary for staging third grade plays.*

At Thanksgiving time Grade Three joined the School in a Thanksgiving Festival. The color scheme called for orange cheesecloth dresses. The children sewed their own seams, emphasis being placed on correct positions, neat stitches, and the importance of fastening the threads in all sewing, especially when sewing seams in cheesecloth.

The class gave a Shepherds' Play. For this they made shepherds' costumes of muslin. A tent cloth was also needed so the children sewed strips of muslin together and then painted them the colors of a real tent. Designs were talked over and new ideas secured from Tissot's Old Testament Bible pictures. Some of the costumes needed little sewing as the pictures showed that quite often they were cut so that they were merely wrapped and tied. Colors and tools used and the manners and customs of the people were discussed at this time.

B. WOOL STUDY

In discussing the changes in weather from September to February, the class told of a number of changes which people make to be comfortable. Among them was the change in dress. The question of how we got our winter clothing naturally came up. They had talked in the lower grades about the wool coming from sheep, but we decided that in Third Grade we could go more fully into the subject. The following is a very brief outline of the plan followed.

1. *Sheep pastures.* Care of the sheep. Many of the children had seen sheep in pastures. Pictures were used. Mauve's pictures of "Spring" and "Autumn" were especially helpful. The children were anxious to see the originals in the museum.

Some one who had lived in the West was asked to talk to us about the life of a sheep herder and the life of the sheep on the plains. Hebrew History stories were used as typical of sheep raising.

2. *Shearing.* We had a pair of shears and a pelt in the room. The children used the shears and then from many of the pictures and the discussion in the class, they had a basis for comparing present methods of shearing by machinery and the old way of hand shearing. The merits of each method were worked out.

3. *Washing of the Wool.* We had pictures to show the factory method of washing wool, and then tubs of warm water and soap were provided. Each child came to the tubs and washed and rinsed some dirty, greasy wool. By a comparison of the wool before and after washing and an examination of the sediment left in the tubs after the water had been thrown away the children saw very clearly that the sheep in their pastures got burrs, dust and even stones in their wool so that by washing the wool was changed from a brown to a white. During this period a discussion took place concerning the effects of hot and hard water on wool and woolen fabrics.

4. *Dyeing.* After seeing the white wool our discussion naturally turned to the way in which our woolen fabrics are made in so many colors. This led to the subject of dyeing. The question arose as to the possibility of changing the color of our wool. The old way of dyeing by means of nuts, berries, and skins was discussed, but we decided that it would take too long. Furthermore, manufacturers made it easier for us to-day by selling a powder, or prepared dye. We then bought a package of dye and spent a period in the cooking room. While wool was being boiled in the dye, we discussed the effect of vinegar, how to get a lighter shade; the different stages at which our dresses might have been dyed in wool, yarn, or cloth, and examined some of the woolen dresses as well as samples of cloth to see if we could tell the way in which they had been dyed, and which would be the most lasting in color. The wool was then spread out to dry.

5. *Carding.* When the class saw the matted wool they decided that the men in the factory must have some machine with which to straighten the fibers. They examined pictures of factory

machines and then made suggestions as to how the fibers might be straightened. We secured cards and by having two children work together the wool was soon worked into fluffy masses. A comparison was then made of woolen and worsted fabrics and their prices.

6. *Spinning.* We had many pictures of spinners at work and when possible a demonstration on the old spinning wheel as typifying in a very simple way the modern machines. By examining some machine wool we found that it was both twisted and pulled. The children then began spinning by hand. After they had spun a short piece of yarn a comparison was then made with the machine spun as to relative strength, smoothness, and appearance of the two.

7. *Weaving.* The class had a play in which they found that they needed something to cover the floor. After talking about the rugs of the early peoples they determined on a community rug. Different methods of weaving were discussed and pictures of early Indian and Hebrew weavers were shown. The following problems were then raised and solved by the class: (a) Design for the rug; (b) color scheme; (c) weaving; (d) the uniting of the parts.

(a) Pictures of rugs were shown, good and poor proportion talked over with reference to the placing of stripes. Each child then drew a plan for a community rug. These plans were finally criticized by the class and the best one chosen.

(b) The best combination of colors was discussed and the problem of colors for center of rug and stripes solved. The children were then ready for weaving.

(c) Some of the children wove plain rugs for the center of the community rug while others wove the ends or stripes. The size of small rugs and the number of rugs with stripes were worked out during the Arithmetic period.

(d) After the rugs were finished, volunteers were called for and the small rugs were sewed to make one large rug which was used in the special dramatization of an original play by the class and at other times when required.

8. *A Chart.* After the children had gone through the different processes in our study of wool, individual charts were made, showing a picture of sheep in pasture, a piece of soiled

wool, washed wool, dyed wool, carded wool, a piece of yarn spun by hand and one spun by machinery, a woven piece, and a picture of a woolen garment. These were arranged in the order in which the individual child could best explain his own chart. Some of the children brought extra pictures.

C. COMPARISON OF WOOL WITH OTHER TEXTILES

As the other textile fibers are treated more thoroughly in the higher grades, the Third Grade touched very briefly on processes involved in the making of our lighter clothing. Flax, cotton, and silk exhibits were used as they showed very clearly the fibers from the beginnings to the woven fabrics. Comparisons were made as to the durability, price and suitability of the different fabrics for the children in the grade. Charts were then made showing the average prices of the different materials as well as the raw fibers of each textile and pieces of the woven fabrics.

II. WORK IN LEATHER

The study of leather was brought about through our study of clothing. Emphasis was placed on leathers for shoes and gloves and their manufacture. The subject was developed with the class. Chamberlin's "How We Are Clothed," and several Elementary Geography Readers were used by the children. The teacher made numerous trips to wholesale leather stores and shoe stores for her own information. She also made, for future reference, a list of books on the industry. The following is a very brief synopsis of the order of work:

1. *Kinds of leather* and how leather differs from hides, and skins were talked about during the class period. The children then made lists of leather articles and decided on those most important to them. All decided on shoes and gloves.

2. The next question considered was, *"How do the boys and girls in our grade get their shoes?"* The children knew the names of some leathers used for shoes but were not sure as to the making of the shoes, so decided to visit a shoemaker's shop near the school. We spent about forty-five minutes one morning visiting this shop. We saw the shoemaker sole shoes, saw the

tools he used, the large skins from which shoes were cut, and the difference between leather for the uppers and the soles.

3. The problem of *buying good shoes* grew naturally out of the talks about shoe making. The children were much interested in the reasons why there were so many foot troubles. Some of the reasons given were too tight shoes, too high heels, too large shoes, and, many times, cheap shoes. Many shoes were collected and the class decided which shoes gave the greatest amount of comfort to the wearers.

4. *Gloves.* The children examined different gloves to learn something about the leather used in glove manufacture and also something about the making of the leather into gloves. The different methods of making shoe and glove leather were briefly spoken about and a pattern for cutting the glove was worked out in class. Afterward a discussion followed on the best ways of keeping our gloves clean and fresh looking.

3. *Charts.* As the subject of leather was developed, the teacher used much illustrative material which consisted of drawings of hides and cleaning processes; cut paper work of glove patterns, awls, and parts of shoe; pieces of leather; pictures for the development of study of hygienic foot coverings; whole and half shoes which had been given by a shoe firm, and different kinds of gloves. After the development of the subject matter the illustrative material was attached on large cardboard sheets. The leather pieces were fastened so that the children could feel them as well as see them.

The children during these lessons had been collecting illustrative material for their own charts, each one trying to get as many different articles and pictures as possible. One lesson was given over to attaching their collections to cards and lettering. At the end of the series each child took his chart home and told some member of the family about the leather talks in his class room.

III. Work in Wood

The need for the study of wood came through our discussions of house building, and the making of our looms and game boards. While in the Second Grade, the children had built a lumber camp, and had talked about the methods of work. We therefore

simply reviewed this subject matter. We did, however, make a study of trees near the school and those seen on week-end excursions. A recognition of the more common trees by their leaves and shapes was attempted and when time permitted blue prints were made of the different leaves and used for individual booklets or quick recognition work.

A. GAME BOARDS

At Christmas time the class determined to make gifts for sisters or brothers at home. After some discussion game boards were thought the most suitable and we began planning for a ring toss. Each child cut his own board for the base, bored the holes for the uprights, and cut his own uprights. After putting the uprights into the holes, different stains were talked over and the best way of applying them decided on and then each child stained his own board. Several cards were then printed, for each board, so that they could be placed on the boards and thus give variety in number combinations. The boards were then ready to be presented as gifts.

B. LOOMS

In making our looms for the weaving of our rugs, the children had to do much work in arithmetic. Right dimensions, so that the rugs would not be too narrow for the lengths, and correct height of the uprights to that the weaving would be easier were but two of the problems considered. We finally planned on having two end-pieces, two side pieces, four uprights, a heddle of two cross pieces and ten bars, and two large dowel rods and twelve small dowel rods in the uprights. Each child made his own shuttle or needle simply by sharpening a piece of the strips used for the heddle and boring a hole in the end.

After the ideas for the looms had been talked over, each child drew his working plan with all correct measurements. He was then ready to measure his lumber, using ruler and trisquare. We then went to the shop to begin cutting and nailing. While working, good positions in using tools, and neatness and care of the shop were always insisted upon.

IV. Paper Construction

All our paper construction work in the Third Grade plainly showed three steps: (1) needs; (2) ways of meeting the needs; (3) ideas gained through the working out of all projects. These steps can be clearly seen in the description of the projects given below.

Along with the construction work, the class always enjoyed the pictures and stories about paper making, the stories about the first books and libraries, and the development of the art of writing and printing, which were touched on very briefly.

A. Books

At the beginning of the term, very simple booklets were made to hold the work for the year or for a shorter time. A poem book was made, with tinted paper for the cover and bogus paper for the leaves. As poems were learned, they were pasted in so that the opposite leaves were left for any original illustration of the poems. Similar books were made for Geography and Nature Study.

In the History work, each child had a collection of pictures, outlines, and illustrations showing the life of the people of early times. To hold these, we planned for a book, more difficult to make and more elaborate than any they had made before. We used two heavy cardboard covers bound with binder's tape. The chief difficulty here was that the children were apt to get too much paste on the tape and this caused wrinkling. The leaves were cut from bogus paper, sewed together with linen thread and after the linen for the back had been sewed the leaves of the book were pasted to the cover. The designs for the covers were original symbols, typifying early historic scenes.

B. Portfolios

It was found that by putting unfinished work into the desks we could not keep it from getting wrinkled, so we very soon planned on making portfolios. These were to be fastened to the lids of the desks by thumb tacks. Each child was left free to make the kind he liked best after first considering the following: (1) the right size portfolio for the lid; (2) the usual size and shape of all Third Grade paper; (3) the size and shape of the paper for the portfolio; (4) how to make the portfolio so that

the papers will stay in them without taking too long to open and close. After the portfolios were finished they were decorated with original designs and nailed to the lids.

V. Clay and Building Materials

A. Records

During our discussions of books and paper we found that there were even earlier records kept. The question arose as to the ways in which we could keep records if there were no papers or books. The suggestions came that we might write on stones or on bark. We then found that records had been kept in that way and that there were also records kept on clay tablets. These were written on when wet, and to show the difficulty and impossibility of change we made a small tablet and several of the children wrote on it and then let it dry.

B. Pottery

During our study of Indian life, we took up the study of pottery. Comparisons were constantly being made between the Indian methods and our methods so as to give not only a clear idea concerning the making of vases, bowls, and dishes, but also a basis for judging what makes one bowl a good one in shape and design while another is considered a poor one.

After a short discussion as to what to look for, the class took sketching pads and pencils and went to the Museum. Each child looked for a bowl which satisfied him as to design, and sketched it. Several sketches were made by each child and these served as the basis for part of the following lesson. The good and poor features were discussed and then the sketches were put aside and the class was then ready to make their own original designs for the bowls. The chief questions kept in mind during the drawing of the designs were: (1) use of bowl when finished; (2) a design not too difficult to reproduce; (3) place for curves.

Original designs for decorating the bowls were made first in charcoal, and then the units were painted on the bowl designs outlined on colored paper.

The children had the bowl designs always before them and by means of the coil method built up their clay bowls. They found that their chief difficulty was keeping their clay bowls the

same size as their designs. The bowls were dried and painted and the designs painted on in black and then painted over with shellac to fix the color. The bowls were then ready to be fired.

Each child took his own bowl and went to see for himself the way in which firing is done. The working of the kiln was explained and this method was compared with the way in which the Indians baked their pottery. Many pictures and stories from "Old Indian Legends" were used.

C. BRIEF STUDY OF HOUSE CONSTRUCTION

A brief study was made of building materials in the discussions about living conditions in New York City. The following is an outline of the topics discussed.

1. *The wooden house.* There are still a few near the school. Some of the questions were: (a) Why not more widely used in New York City? (b) What part of our school is of wood? (c) Protection against fire, and fire laws.

2. *The stone house.* The chief questions were: (a) Method of quarrying stones; (b) transportation; (c) building of stone houses; (d) use of more expensive stones for house decoration—marble in apartment house halls; (e) recognition of stones; (f) use of slate. We used many pictures in this study, those from Underwood's being especially helpful. We also used Chamberlin's "How We Are Sheltered," and an exhibit of building stones from a building firm.

3. *The brick house.* (Chamberlin's "How We Are Sheltered" and letters written by heads of brick firms.) We discussed: (a) the making of bricks; (b) times and places of making bricks; (c) method of building with bricks.

4. *The concrete house.* Study of concrete in school buildings. Discussion of ways of making blocks based on watching of buildings in process of construction.

VI. Foods

A. OUR MARKET STUDY

Early in the fall we took up the study of foods. This study was based on the goods found in the homes of the Third Grade children. The topic of where the mothers get the goods was followed by the question as to where the store keepers near the

homes would get their supplies. Many of the children went to their grocers and were told that they would go downtown early each morning and buy from the wholesale man. This statement brought out the fact of a difference between wholesale and retail stores and markets.

The class had been to retail stores but had never been to a big wholesale market, so in order to understand more clearly the dependence of our retail stores on Amsterdam Avenue on the large wholesale markets, and also to find out, if possible, where the wholesale men get their supplies, we, as a class, went to visit the wholesale district. Each child took a pencil and pad to write down anything he wished especially to talk about later, or to draw pictures of things he saw. The children were also told to ask any questions of the men at the markets if they were not sure about what they saw.

While at the market the children saw wholesale fruit stores. They were much interested in reading and writing down the names of places found on the boxes and wrappings of the oranges, peaches, apples, and pears. They saw the different methods of packing vegetables, bags of onions and potatoes, bunches of celery and crates of tomatoes.

They were interested to find the vegetables so fresh and questioned how they were brought into the market and kept in such good condition. We made inquiry of the wholesale man and then went to the public square to see the truck wagons which had come from New Jersey. We thus found out that much of our fresh food comes from New Jersey and is brought to us by wagons.

At the wholesale meat store we saw the different ways of wrapping the meat, and on the track in front of the store stood a number of refrigerator cars from Chicago. As the men were unloading these, we stood for a while watching and learning some things about refrigerator cars. The class also saw that this illustrated a method of keeping the food from spoiling as well as a method of transportation.

While passing along the street we found an Italian store. Some of the products seen through the window the children recognized, and knowing that Italy was across the water very soon came to the conclusion that some products were brought to

the markets by boats. As several ships were in that day right near the market, the children of course had much pleasure in imagining the kind of food they might have brought to us or what products we might send to the people across the ocean.

The oyster boats were in, so we went to the dock and saw a large boat filled with large and small oysters. We saw the way in which the baskets were filled and taken to the store houses ready for shipping to different parts of the city.

One of the children saw the name "Commission Merchant" and copied it in her note book. In a following discussion this word was talked about and the work of the commission merchant explained. They soon had some idea of his value to people living at some distance from the market and could very plainly see that in order to pay his commission the farmer must charge more for the goods and thus make the retail man and the mothers at home pay more.

As can be seen, this visit was the basis of class room work for a number of lessons. For example, we discussed methods of transportation by wagons, boats, cars,—both express and freight cars—and some things by parcels post.

As many of the children had been to the country during the summer and were also much interested in our school garden on the roof we took up the question of the methods of raising the fruits, vegetables, and meats. Lists were kept of the most common foods in each class as found on the tables at home. Each child then had a choice of one in each class to tell about. The class was allowed to ask any questions if the descriptions were not clear. The children also were encouraged to add any bits of information.

In summarizing this unit of work a class book was made. In this book were individual papers on topics similar to the following, "The Most Interesting Things at the Market, "The Ways in Which We Get Our Meat," "The Packing of Fruit," "The Ways in Which Food is Brought to Us." The papers were all written on subjects suggested by the class and chosen by the individual from the lists. Pictures of foreign and domestic products were pasted in as well as papers from Arithmetic and Geography based on this study.

In all of this work seed catalogues, government reports, yearly state fair reports, and Cornell and Illinois University Bulletins were found most helpful.

B. MILK STUDY

After the completion of our Market Study we took up the study of the New York City milk supply. The following are some of the problems discussed: (a) The importance of the milk supply to us; (b) Source of milk supply; (c) Care of milk—the importance; (d) Summary.

(a) Of course the children spoke of the importance of milk as food for small babies. We then spoke of the food value of milk and found a table of food values in one of the pamphlets sent out by a milk company. This table of values compared the nourishment found in a quart of milk with the nourishment found in certain amounts of vegetables or meats.

The importance of the milk supply was also shown by the distress which was caused by the holding up of the city supply by a severe storm during the winter. The loss of this one food caused greater concern than the loss of any other food.

(b) In order to find out more definitely about the source of the city's milk supply we asked a large dairy distributing house for the privilege of visiting their plant. The children had certain definite questions which they wanted to have answered by this visit.

On entering the building we were at once taken to a large room in which moving pictures were thrown on the screen. These pictures gave to the Third Grade children a better idea of the complete story of milk than could have been given in any other way. After seeing the pictures, we were taken from room to room in the building and as much of the workings of the modern building and machinery as it was thought children of this grade could understand was explained by the guide. The class was alert and always ready to question what was not perfectly plain. The special interests of the class were perhaps centered in the cleaning of bottles and cans, the methods of filling and packing bottles, the refrigeration plant, the pasteurizing room and the immense amount of machinery required to keep the milk in good condition.

During our study we found that the supply came from seven different states and the greatest distance, about 450 miles. This served as a basis for some geography work on location.

(c) The distance from which we get our milk was one of

the sources of the bringing up of the problem of the care of milk. We used pictures, and on our trip around the dairy we could easily see the many ways in which others try to keep the milk pure. This naturally led to a designation of the ways in which we could help our mothers in keeping the milk pure after it enters the homes. The children gave a number of ways based on their own experiences and then we sent for a Board of Health bulletin for definite rules regarding the care and sale of milk.

(d) The class made a collection of pictures and arranged them on a cardboard so that they told the story of milk from the time the cows were in pasture to the receiving of the milk in our homes. Each child then made individual booklets. These booklets contained illustrated stories, original pictures, or those collected from magazines, typewritten lists of important questions to be answered by our visit, questions given by the children, a hygiene summary based on our milk study, and maps showing the best dairying sections in the country.

In this study we found most helpful "Farmers' Bulletin No. 74, Milk as Food," and small bulletins and pamphlets sent out by the different milk companies.

C. PREPARATION OF FOODS

During our Indian Study we made constant comparison between their foods and methods of preservation and ours. For instance, we found by testing that we could not dry meats, squash, and corn on our roof in the fall. We found that many Indian tribes preserved their foods in this way while ours moulded. This brought about the question of climate on the preservation of all foods.

In our preparation of special foods we studied (a) Indian corn; (b) milk products.

1. *Corn.* In our study of corn, a comparison was made between the ways in which corn was used by the Indians and the numerous ways in which it is used to-day. A corn exhibit, showing the different corn products, was very helpful at this time.

Project: Corn meal mush. While studying corn we took up the study of corn meal, comparing mill ground meal with some we ground by hand, using a mortar and pestle. After the meal

had been stirred in, some of the topics discussed, while we were waiting for it to be thoroughly cooked, were: (1) value of double boiler or heavy iron boiler; (2) length of time to cook mush to give us the most nourishment; (3) why must the meal be stirred in; (4) serving of mush as a cereal; (5) value of Indian corn to us.

2. *Milk Products:*

a. *Butter making.* While studying milk we included the study of some of its products. In butter making, as one of the projects, we bought the cream instead of getting the milk and skimming it, as the children had seen this done in a lower grade. The cream was then divided and part was churned by shaking in the bottle, and some by using the Dover egg beater. The first method typified the earliest way of making butter and the second, the paddle arrangement of the churn we had seen at the dairy.

After churning, the butter was washed and salted and then packed in a bowl and put into the ice chest until time to be used.

b. *Cheese making.* While at the dairy we found that some of the unused milk was made into cheese. Just a brief discussion of the process of making different kinds followed as this subject is treated more fully in a higher grade. It was decided that cottage cheese was the simplest kind to make.

Project: Making of cottage cheese. We bought two quarts of milk and kept it in the school room until it had soured, the children watching the change and always keeping it in the warmest place. The milk was then heated and strained, the children watching the process and noting the whey and curd. After straining, the children suggested salting to give it taste. Some of the butter was then worked into the cheese and it was ready for use.

Afterwards the butter and cheese were used with crackers for sandwiches. Members of the class were asked to serve and we had a little class party.

Motivation in Other Subjects by Means of Industrial Arts

It would be impossible to give for any one subject all the ways and means of making the subject matter more vital and more worth while to the child. The following is a brief list of typical cases in which this has been done.

I. *Geography and Nature Study.*

A. *General location of places* from which we get our supplies,—milk, market studies, wool and leather.

B. *Study of climatic conditions* affecting the production of our supplies,—fruits and vegetables.

C. *Study of soils* and earth formations through our interest in market study and gardening.

II. *Arithmetic.*

A. *Tables.* Five and ten taught in connection with trips to the market, museum, and on other excursions. One child is appointed by the class and is responsible for payment of car fares. The computing is done by the whole class in advance. The nine is taught through our study of milk, as milk is sold in New York generally at nine cents a quart. Three and four are taught usually through market problems.

B. *Leather Study.* Computing cost of shoes for each child for a year, the cost for the entire room; cost of making and repairing.

C. *Textile Study.* Cost of raw and manufactured goods; cost of raising sheep, wages for herders. Problems based on numbers of sheep.

D. *Wood and Paper Construction.* Problems in measuring; cost of materials.

E. *Foods.* Teaching of dollars and cents, pounds. Cost of individual meals, lists brought from homes. Market lists kept, actual prices used. Teach changing of money, recognition and value of pieces of money.

III. *English.* (Reading, writing, literature, spelling.)

A. Summary of the different industrial processes, both oral and written.

B. Plays based on industrial work.

1. Story of Joseph.
2. A market play.

C. Stories relating to industries.

D. Word study based on words needed in written descriptions; wool, leather, butter.

E. Writing based on pupils' need to write letters of thanks to the guides in places we visited, need of written descriptions for booklets.

F. Mauve's "Spring" and "Autumn," Millet's "The Spinner," Remington's pictures of Indians.

IV. *Gymnasium.*

Indian industries and ceremonies expressed by dances and plays worked out by the children for assembly programs or other occasions, "The Indian War Dance," "The Indian Corn Planting Ceremony."

Esquimaux games. Target practice.

Shoemaker's dance worked out during the study about leather.

V. *Fine Arts.*

Designs for bowls and decoration of bowls.

Design for booklets.

Designs for Christmas cards.

VI. *History.*

The comparison of simple industrial conditions of peoples studied with the present.

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BIBLIOGRAPHY

Bennett, H. G., The Manufacture of Leather, Van Nostrand Co., New York.

Binns, C. F., The Story of the Potter, George Newnes, London

Carpenter, F. G., How the World Is Fed, American Book Co., New York.

Chamberlain, James F., How We Are Clothed, Macmillan Co., New York.

How We Are Fed, Macmillan Co.

How We Are Sheltered, Macmillan Co.

Dooley, W. H., Textiles, D. C. Heath & Co., Boston.

Kinne, Helen, and Cooley, Anna M., Shelter and Clothing, Macmillan Co.

Mason, Otis T., The Origin of Inventions, Walter Scott, London.

Matthews, F. S., Familiar Trees, Appleton, New York.

Woolman, Mary S., and McGowan, Textiles, Macmillan Co.

Bulletins No. 35, 41, 50, and 51, Bureau American Ethnology, Washington, D. C.

Farm Bulletins, Dept. of Agriculture, Washington, D. C.:

No. 74, Milk as Food.

No. 166, Cheese Making on the Farm.

No. 241, Butter Making on the Farm.

No. 298, Food Value of Corn and Corn Products.