

## History.

The chief topic for this week has been the food supply of the Plymouth colony. We traced the history of the cultivation of Indian corn from the first crop, planted with Squantos' aid to that which by means of trade with the Indians was a revenue to the colony. In this connection we noted also the change from the commune to the individual ownership of land and its effect upon the prosperity of the colony. The children have asked many questions concerning the additions to the colony after 1620, the names of the ships which visited Plymouth, etc. One period was spent upon these details and the mention of the cargoes sent back to England led to questions as to how they finally paid their debt to the Merchant Adventurers. They were told accordingly of the plan by which the debt was assumed by individuals and the colony left in freedom.

Miss Hoblitt.

## Number Work.

They are changing fractions into decimals based upon their science/work. They have been analyzing certain metals, such as pewter and found it was made of one part lead and four parts tin. Then they found there would be  $1/5$  lead and  $4/5$  tin and changed this to 20% and 80%. Then they were given a piece of pewter weighing 6 lbs. and asked how much would be lead and how much tin. They were then given larger quantities of pewter to compute the parts of tin and lead. They have been working on gun metal in the same way.

Miss Bacon.

O.K.

## Sewing.

The girls have continued working on curtains, hemstitching them. Fletcher has been setting up his loom. The children who had their frames finished have been weaving and the rest spent their time in sewing.

Mrs. Baxter.

## History.

They have been studying the manorial system as introduced in New York, taking it up from the side of its advantages and disadvantages. I have been forced to give them nearly all of the facts, as there is no one book which they could use ~~for that~~. They have taken the Van Rensselaer and De Vries manors as typical ones, the Van Rensselaer because of its position on the Hudson and the De Vries because of the part <sup>owner</sup> it played in the early history of New Amsterdam. They have written the history of New York up to 1638 making an outline before writing in order that they ~~should~~ get the important points. Last year when they made their outlines their writing was very stiff but this year it is much easier and the skeleton is not so apparent.

Miss Bacon.

OK,

## Science.

This week we have continued our work on sound as leading up to selective absorption of light.

I began by asking whether our piece of rubber tubing would go faster or slower if I pulled it harder, and whether it would go faster or slower if I used a shorter part of it. The answers were prompt and correct. I also asked, Since a string half as long as another vibrates twice as fast and since the string giving  $c''$ , an octave above middle  $c$  ( $c'$ ) is half as long as the string giving  $c'$ , how does the number of vibrations of  $c''$  compare with that of  $c'$ ? This question had to be repeated before the class had it clearly in mind, but they finally gave the right answer. I then gave a good number of problems on the number of vibrations of notes a whole number of octaves apart.

Next I stated the law-- $v = n \lambda$

where  $v$  is the velocity of propagation of a wave motion,  $n$  the number of vibrations in unit time and  $\lambda$  the wave-length. We stated this law in a particular case by assuming a wave-motion with  $\lambda = 1$  ft and  $v = 10$  ft. per sec. The class saw that  $n$  must be 10, which verified the law in that case. I gave several problems on this law, giving two of the quantities and having different members of the class solve for the third. The solution of these equations presented some considerable difficulty, although the group knew that both sides of an equation may be multiplied or divided by the same quantity.

The next question was, Which goes faster, a high sound or a low one? Some said low, some said high; Fred said neither, but Willie was sure that high sounds ~~xxxx~~ go faster because a high sound on the piano dies out more quickly and therefore goes past the listener more rapidly. We saw what the effects would be in listening to a band at a little distance and I suggested testing the matter by being at some distance from the piano and having some one strike simultaneously a low and a high note. Dorothy wanted to go at once to the gymnasium and try it. I also stated that loud sounds do go slightly faster than ordinary sounds and instanced hearing the report of a cannon before the command to fire.

I then asked, Since  $v = n \lambda$  and  $v$  is a constant, if we make  $n$  very large, will  $\lambda$  be large or small? and if we make  $n$  very small? Both were at once answered correctly. I also gave several problems on the wave-lengths of notes distant from each other by whole numbers of octaves.

Next I supposed I had two wires tuned in unison, started



one of them vibrating and then in a moment damped it. For a moment or two no one thought of the other wire being set in motion, although one or two other effects were suggested.

Then some one suggested the motion of the other wire, we saw how it was set in motion and I illustrated it by the starting of a hammock by slight repeated pulls on a rope. We also saw what the effect would be if the wires were not in unison but somewhere near it and what if the second wire were an octave above the first. I showed how to test this in a couple of ways on the piano and also showed how resonators work, spoke of the notes that we ordinarily use in music being analyzed by the resonators into many notes and wrote down the first ten harmonies of middle c.

We then turned to our light and had just time to observe the spectrum of an ordinary flame (a) normally and (b) when covered with a red glass. This was done by holding in front of the flame a card with a slit in it and then having the observer stand a couple of meters away and look at the slit through the prism. The red glass should cover about half the slit.

After class Dorothy and Geraldine tried in the music room the experiment on resonance that I had suggested and found the statements very prettily verified.

Arthur Taber Jones.

This week we made a large playhouse<sup>✓</sup> for the school out of boxes and the children are furnishing it. They made mantel pieces for the rooms and wove rugs for their smaller playhouses. These were made of wicking. The frames for weaving were made so that the rugs would fit the floors. They used long brads to hold the warp.

We cooked cranberries.

The children wanted to make a book like their song-book which is illustrated with pictures and we have begun making this, each child making a picture, and I write the words used with the picture. This was the suggestion of the children's.

Miss Scates.

OK

**Social Occupations. (a & b).**

The children did not know which way trees would fall in their study of lumber and thought that the men would get hurt. By experimenting they found that the tree would fall on the side of the deepest cut, but that the wood-chopper would not cut all the way through, but that it was easier to go all around. They have so far taken up the story of the logs only as far as floating them down the stream. They have played in the sandbox with logs, putting twigs up for trees and playing cutting them down. Then they cut off the branches, made them into logs, dragged them over the snow and put them on the ice to wait until it melted. They built the log cabins in which the men would live and have talked about the wood-chopper's life. In playing this the point was brought out that all the trees ought not to be cut down, only the largest and best.

Two days have been spent in playing this, in order that they might get a clearer idea. I found that in some of their work even the older children did not get a clear connected idea. This was shown when they came to dramatize it. It was necessary to go over the same thing two or three times. They have continued the same number games that have been reported on.

I have continued reading to them from "Black Beauty". IIIb. are very much interested in the pictures in "Knight and Barbara", so I read another chapter and let them illustrate it, before I showed them the pictures in the book. Some of the children showed a good deal of imagination in this, but most of the pictures were not nearly so good as those in the book.

Miss Andrews. *OK*

**Hand Work.**

They finished their freight cars. In cutting out the pattern, some of the children cut the bottom of the car out altogether, so they had to think of a way of putting it on again. They cut a piece of paper the size of the bottom with sides folded down so they could paste it on. The work was not very neat, but they saw and appreciated their mistake.

Miss Lackerstein.

## History and Science.

They have spent an hour on number work connected with the making of the set of weights for use in the school and in calculating the cost of the old weights they want to take home. They are so unequal in their ability to handle number that the same sort of individual work has to be done with them for a while as is being done in their weighing.

One hour was spent in continuing the acting out of the different occupations in a village of metal workers.

Miss Camp. O.K.

## History (b).

They had collected a number of weights which the different members of the class had made. These they collected and decided to make a complete set of weights of both ounces and grams. They therefore selected the best of each set and have been making up the gaps made wherever none of a certain weight were considered good enough to keep. In number they have found  $1\frac{1}{2}$  of 16 oz., 8 oz., 4 oz.

They have also told the story of the tribe, first reviewing spontaneously the life of the nomad tribe.

Miss Hill.

## Cooking (a &amp; b).

Cooked potatoes and experimented with the sweet juiced vegetables--carrots and celery. They found that these contained water and woody fibre as well as the potato. But they did not contain starch like the potato. The children tasted the juice and decided that they wanted to save it in cooking because it is sweet. They decided to cook sweet-juiced vegetables in a small

amount of water.

Mrs. Fouling.

Reading (a).

They have finished writing a reading-lesson about the cave people. They show a great deal of interest in their work, changing the sentences when they are not euphonious or suggesting words that might sound better. They have done some blackboard work with words ending in ing as string, sing, ring, fling, etc. and words ending in ad, as lad, sad, bad, etc., so that they can see the same sound of a as words ending in at. I do this also to acquaint them with consonants, which they do not get very well.

Miss Lackerstein.

Art Work (a).

They are alternating, spending one day in clay work on some cast of an animal and the next day in illustrating some stories which they are writing with Miss Camp. They represented the cave and Ab and old Mok starting out to find a stone to make a kettle. In comparing the work of these children with that of the children of the same age last year, I find a much better appreciation of form, which I think is due to the clay work.

Miss Cushman.

Art Work (b).

I find with this group as a whole they have very few pictures in their mind of their work. They do not work together as a group and are not able to give me any clear ideas of things they have talked about which can be illustrated.

Miss Cushman.

## History (a).

In following the voyage of Columbus the children have come to Cuba and have followed Columbus on his voyage along its coast to Hayti. One day the children drew a map of the Bahamas, Florida, Cuba and Hayti. The ones who were first to finish drawing them on paper began modelling them in sand. Two showed the position of the islands by a raised outline of them in the sand. Only the third who tried working in the sand attempted to show the mountainous formation and general contour. I have continued reading from Fiske. We have followed the home voyage with the incidents, as the storm, the landing in the Azores, the stop at Portugal and the final arrival at Palos in March.

Miss Hill.

## History (b).

We have continued the story of Columbus' voyage, taking up his return to the islands, and finding that nothing had been accomplished during his absence; his beginning of a city there and the fact that he considered the natives conquered and demanding from them a tribute. I told the children that he required every person over fourteen to bring a little bell full of gold. I asked the children about how much this would be worth, and they seemed to have very inaccurate ideas. Some of them had seen a \$5 gold piece, some a \$10 and one or two a \$1, and from this and the size of the bell we got at an idea of the value of the tribute. We talked about where the natives could find the gold and ~~as~~ what the labor involved would be. They were told of the enslaving of the Indians, of the fact that three hundred were sent to Spain to be sold as slaves and Columbus' justification of this

by feeling that they were sent to a Christian land where they would on the whole be better off. I told them something of the character of the colonists who had come out with Columbus and the difficulties that arose and finally of the complaints that reached the king and queen of Spain and the sending of a person to investigate. I think in one more lesson we will finish the story of Columbus.

One period was spent in looking over pictures illustrative of the life of Columbus. Some of these were the Perry pictures and others in a book I had. It showed the costumes, the landing at San Salvador, the return to Spain, etc.

One period this week was spent in number work. I gave the children the problem I had given Va: if we take  $\frac{2}{3}$  of a cup of milk and 1 teaspoonful of cocoa and one of sugar for 1 person, how much will it take for 3, 4, 5, etc.? All of the children in this group except William were able to work this out almost unaided. Two of the children worked it out up to 10 and the others not so far.

In reading they have continued the story of Robinson Crusoe. Only two of the children in this group who are here have difficulty in reading.--William, who cannot read at all except a few words here and there, and Thomas, who is gaining but very slowly. We have written once this week, the same two children having difficulty in writing.

I often find that when I have the children from 11:30 to 12 they are almost incapable of doing any thinking. On one or two occasions when this has been evident I have simply given up the lesson I had prepared and read to them from some book. This week



I read one or two chapters from the "Knight and Barbara" book. This has no special value except the relief from fatigue and the enabling the children to think and feel as a group. I have wondered whether it would not be well to have some good literature on hand which I could use when it seems best to give up their regular work.

Miss Runyon.

#### Number Work (a).

I have spent two periods with these children in trying to get them to estimate the amount of milk it would take in making cocoa for different numbers of people,  $\frac{2}{3}$  cup for 1 person. Donald has been the only one present who was able to add by  $\frac{2}{3}$ 's. We had measuring cups and used them to look at. It did not occur to me until later that I ought to have had the children fill the cup two-thirds full with water and then another cup two-thirds full and try to put them together and find out how many whole cups and a fraction it would make. When I had Vb. later I did this and the actual measuring seemed to make the thing clear almost at once. I shall try this with Va. next time.

Miss Runyon.

#### Cooking (a).

Meat (continued) 1. Quality of Cuts. 2. Location of Cuts. The reason why some parts of meat are tough and some tender was talked about. The effect of exercise on the human body was spoken of and the children knowing that this was to harden the muscles, concluded that the same thing would happen in animals, used for food. They also knew that exercise brought more blood to the parts, and the general opinion was that this would make

them better for food than those parts which received less. The only question then was of its being possible to cook the tough meat in such a way as to soften the fibres and at the same time retain juices and flavor. It was thought that this could be done if a good deal of time and attention could be given to it. On recalling the parts of the cow which had the most motion--the tail, neck, jaws and legs were named as being tough. A picture showing the skeleton of a cow and another showing the muscles were examined, the children being particularly interested in tracing points of resemblance and difference between the cow's skeleton and that of man. This led to some discussions, which were settled by a physiology being brought and the picture of a human skeleton examined. Some of the children could not get, from the latter picture, an idea of the thickness of the body nor the curving form of the ribs until attention was called to their own bodies and the direction which they knew their ribs followed and the various organs held within the framework. The children were told the parts of the cow from which the different cuts are obtained, and were asked to tell which would be the tender and which the tough ones, and for what purposes they would be best suited, with reference to the method of cooking.

For luncheon, a leg of lamb was roasted, after having been weighed and the time of cooking calculated. Mint sauce, boiled rice and cocoa were also prepared.

OK.

Miss Tough.

## Art Work (a).

This group is also lacking in visual interest in connection with their history work, possibly because the subject is so much outside of their own experience, so that it has been very difficult to give them any illustrative work.

Miss Cushman.

## Art Work (b).

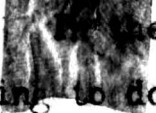
They have been alternating between clay work and illustration. I noticed from the reports that they have been reading "Robinson Crusoe" and asked them to tell me something that we could illustrate from it. At first nothing occurred to them. As we talked a little more about it, several pictures came to their minds and we had a very good lesson in reviewing the appearance of a landscape on the seashore.

Miss Cushman.

## History.

The lesson in advance this week has been the bringing of wives to Virginia for the colonists. The children had once or twice asked me how the women came over and when they came, and so I asked them to suggest what plan would be taken to bring women over and some of the children suggested that the men go back to England and marry them; and others that some of the women come over and marry the men. Then I told them of Sandys' plan of selecting respectable young women who would come over and stay in the colony to be selected as wives. I told the children that the young women had not money to pay for their passage and asked how it should be paid. Albert suggested that the men they married pay for their coming over. They were told that this was the plan adopted and tobacco to the amount of eighty dollars was paid for the passage money of each woman. The children asked what would happen in case they did not like any of the men and were told of the plan that they would simply be provided for in the houses of some families and that the marriage was not in any way forced. I was gratified to find that the children talked about the subject in an interested and very simple way without the slightest sentimentality.

We then took up the coming of the first slaves to Virginia, the children answering questions as to what they could be used for, how the climate would affect them, where they came from, how the slave-trade began, etc. We also summed up the prosperity of the colony now and the fact that they had a share in the making of the laws, the beginning of homes and general prosperity from the great addition of new colonists.



During their period in Physiography I took up what I have been wanting to do for some time, the interpretation of landscape pictures. I did not have any pictures of scenes in Virginia or along the Atlantic coast which we have been studying chiefly, but I had some of the Tyrol in Austria and gave these to the children to interpret. One of these showed high, barren mountains without any trace of vegetation. They explained this by saying that the mountains were either of rock too hard to be disintegrated and form soil, or else that the soil was blown away as fast as it formed. They noticed the steep sides and rough appearance of the mountains and we decided that they were younger than another group of mountains with long, gentle slopes covered with vegetation. We saw gaps through the mountains and decided that here was a place where the river had cut down through the rock, leaving a hard layer on each side. There was also a scene of a mountain covered with snow and we discussed what would be the effect of the packing of the snow during winters and the melting during summers. One of the children gave me the word avalanche for the sudden sliding down of the snow, and I told them about how glaciers were formed, and they told me of the effect of a glacier as it moved over a surface in smoothing everything before it and leaving when it melted the pebbles and boulders which it had carried along with it. Two of the children told stories they had read about people in mountain regions where there were avalanches.

In one of the pictures which I showed the children of a seacoast and a high cliff, this sentence was written below:

"Steadily backward the ocean forces the rocky shore."

The children told me what the line of poetry meant and just how



The square where the two columns come together indicates the total number of small squares in that large square. It has interested the children very much, but I found that George was counting on his fingers and even counting by 1's a good deal of the time.

Miss Runyon.

### Science.

They have spent three hours in connection with the general subject of gravitation. The children made a pump by taking glass tubing 1 1/2 ft. long and fitting it with <sup>a</sup> ~~the~~ piston made of leather cut slightly larger than the inside of the tube. The piston rod was made ~~of~~ heavy copper wire. To keep the piston head from slipping off this rod, they melted the end of the rod to make a large enough ball to hold it in place. This pump worked very well as long as the leather was flexible and larger than the bar of the pump. They then began a series of experiments to find out what was the weight of the air which enabled us to use a pump and the cause of the variable pressure in the winds and currents that they had been talking about. By exhausting the air in the flask with the help of a long tube and an air-pump, they saw a column of water about 8' long supported by the pressure of air in a reservoir below. The labor of exhausting the air was so great that a siphon tube has been substituted <sup>and</sup> in place of water the children began to use mercury as a measure of the pressure of air in a barometer tube. They had both the small tube inverted in a dish of mercury and the U-tube with the short arm supporting the long column.


Two hours have been spent in working out the comparison of the weights of mercury and water. A half hour was spent in reviewing the way in which weight measures in the metric system are derived from cubic measure; i.e., one cubic centimeter gives a weight of one gram and we therefore could measure a certain volume of water and get a certain weight equal to the weight of mercury which they obtained by direct measure. They guessed that mercury was 8 times as heavy and in their measurements found it was 11 times. I then told them that by more accurate measurements and weights, it was found that mercury was more than 13 times as heavy.

OK.

Miss Camp.

#### Science.

They have talked about the copper resources of the colonial people and studied two states in which copper is found--the oxides and the salts of copper, and the native metallic state mixed with quartz.

Miss Andrews. 

#### Art Work.

They are still working upon their slabs of Marquette, which are nearly finished. They have not lost their interest for one moment. Hugh said one day: "Do you remember how we used to do those old drawings? My, but I like this better!" and all the class seemed to echo his sentiment.

I have not noticed it particularly with this group but with all of the younger children when taking up clay work after they have left it for a few days, they declare that someone has been working on it while they have been away. This is sometimes embarrassing in the presence of visitors, as the work has



not been touched. I attribute it to the fact that at the end of the period they do not see the work as it really is but their own mental images.

Miss Cushman.

## History (a).

The group have <sup>studied</sup> the course of events about Boston up to the time of its evacuation by the British. A relief map of North America was carefully studied and the important points for defence and attack noted. The class thought that if the British should capture New York, there would be no hope for the Americans as the colonies would be cut in two and they concluded that the capture of New York would be the first step the British would take, and the Americans must plan to prevent this. One plan suggested <sup>was</sup> to invade Canada and capture Quebec, which from their study of the French and Indian War they knew to be a very strong fortress. They have read for themselves the siege of Boston in "From Colony to Commonwealth" and have spent one hour in writing up the work passed over in discussions. *OK.*

Miss Bacon.

## History (b). (Two weeks' report).

The Dutch explorations in North America were reviewed and those in Africa taken up. In giving the history of the settlements made by the Boers the children became so interested that we followed the history <sup>of South Africa</sup> down to the present time. The group had gathered together many isolated facts concerning the Boers and showed great delight when these were placed in their right relation in the narrative. We have begun on the discoveries and explorations made by England, taking up first those they already know something about, as the Cabots, then going over <sup>additional</sup> the trip of Sir Francis Drake around the world, noting the knowledge he gave to the world--a more definite idea of the western coast of the United States.

We next studied the formation and history of the East India Company comparing it with that of the Dutch. We saw it invested with sovereign powers, planting colonies along the coast of India and gradually <sup>misleadingly</sup> ~~meddling with~~ native affairs until it virtually ruled India. Then I told them something of the poor administration of affairs, the consequent troubles with the natives and the final assumption of government by England. The children were much delighted when I told them that this was the country where Kipling spent most of his life and where the people and animals of his Jungle Book were supposed to live. They had not connected the two before. There are comparatively no books the children can read at present, which will bear directly on their work.

OK.

Miss Bacon.

Number Work (a & b).

They are continuing Percentage. The chief trouble seems to be hesitancy and inaccuracy in multiplication. Where they can add, they always do so in preference to multiplying; for example 3% of 54--they add three 54's instead of multiplying. I thought I could break this habit by giving them larger percents but they are so slow in multiplying that they get discouraged and almost stop,--that is, they dream; so I went back to 3, 4 and 5% and insisted on multiplication. They seem to be getting the idea.

Miss Lackerstein.

Science (a)

They have dropped their experiments for a while in order to get more number work. I have given them examples in Percentage which they do in class.

Miss Hill.

## Science (b).

They have dropped their experiments for the same reason as VIIa. Both groups have found great difficulty in getting the results of their experiments in Percentage.

Miss Hill.

## German (b).

Used as basis for work the story of the house that Jack built as given in Gueber's Märchen vol. I. Sentences made up of different combinations of these words were used. The children asked questions of each other in German, such as "Jakob war ein Mann; sind Sie ein Mann?" "Nein, ich bin ein Knabe," etc. They are learning Georg's song from Götz von Berlingen:

"Es fing ein Knab' ein Vögelein.  
Da lacht er in den Käfig 'nein.  
Der freut sich traun so löppisch  
Und griff hinein so täppisch,  
Das flog das Meislein auf ein Haus  
Und lacht den dummen Ruben aus."

Miss Scribsby?

## Art Work (a).

They have been working on still life in clay. I intended first to have them make just a quick sketch but they were interested in it and wanted to make it in better form, and so I permitted them to go on. I am now going to give them water color. They are learning principally how to handle it.

Miss Cushman.

## Cooking (a).

Review of Albuminous Foods--Eggs.

In recalling those foods in which albumen had been found--eggs, milk and meat were mentioned. The general characteristics of

albumen which the class had found out ~~were~~ asked for and given, after some questioning. Particular attention was given to eggs, one being broken and its parts examined. The space at one end between the skin and the shell was spoken of and examined. The class was satisfied to call the substance which it contained air but one child insisted it might be some other gas. Portions of the eggs were tried in water of different temperatures to find the point at which they could be cooked best. With these experiments in mind, eggs were cooked for luncheon, and cocoa and white sauce made.

Number Work: Individual recipes for cocoa and white sauce were given and the children required to calculate from them the amounts necessary for the whole class, as one child was to do the work in each case.

S.K.

Miss Tough.

## Science.

On account of the need for number work in this group most of the time has been spent in number work in connection with the parts of the metric system they have been making. They have gone on to the general subject of work and the units for measuring it in both the English and the French systems. They are to use these units in the arm, first as an illustration of a machine, and then in some machine they decide to take up, such as a clock or a steam engine, but most of the time is to be spent in the different processes needed in working out simple experiments. In working out the unit of work they had the weights and the measures and then were asked what could be used as the unit. After about ten minutes' discussion one child suggested that the kgm. would be the unit in the French system and later on the same child suggested that if a pound raised a foot in a certain time, that could be used in the English measure. The other children had given me the horse power unit without knowing how many pounds or what rate it represented. In all examples they have done they have ignored the question of rate and used simply the total amount of work done. I am waiting for them to raise the question of rate in connection with the unit of work done. I have given them different tasks, such as to show what would represent  $1/500$  kgm. of work. As soon as they had accomplished this by choosing  $1/500$  of a weight, I asked them to do it in another way and in most cases without suggestion they have succeeded in doing it by dividing the distance moved instead of the weight. In comparison with the English metric system they have occasion to use the fractional parts of the pound and foot as contrasted with the

decimal metric system and in comparing these fractions they needed to know how to reduce a fraction to its simplest form. I found that they had no idea of factoring or of prime numbers. They told me there were some numbers which could not be divided except by themselves. I gave them the word "prime" for these numbers and we wrote all the prime numbers up to 200.

Miss Camp.

OK.

Latin.

Using the stories they have studied as a foundation, this group is putting together the first three Latin conjugations. Besides they are doing some sight translation, the story of Queen Elizabeth for one and of George Washington.

Miss Schibsby.

Cooking.

Same as VIIa.

Art Work.

Practically the same as VIIa.

## History.

We spent one period this week upon the relations between the Pilgrims and the Indians. The children were already familiar with the early visits of Samoset, with Squanto's devotion to the Pilgrims and the treaty with Massasoit. After recalling these stories we took up the history of the Wessagasset colony as showing the other side of the picture. The children were greatly interested in it and condemned Standish's seizure of Witnamot and Pecksnot as "treacherous even if it was necessary", but felt confident that the result would be to frighten the Indians out of any further attacks upon the whites.

We next took up a fuller discussion of the government of the colony, going back to the compact on board the Mayflower with the election of Carver and from that tracing the development of the government, taking up concrete cases; for example, the duel between Hopkins' servants, in order to show how absolutely the first government was "by the people", to illustrate methods of punishment, etc. We also developed the idea that trade must be protected by legislation and that, on the other hand, the welfare of the settlers must not be sacrificed to a desire for individual gain, this leading up to the laws regulating the export of corn, wool and lumber.

We have now begun the story of the Massachusetts Bay Colony. The children show an increasing interest in the details, names, dates, etc. This is partly accounted for by the fact that some of them are writing stories which they are anxious to make historically accurate.

Miss Hoblitt.



## Latin.

We are going on with the Jason story. In grammar we are working out the declensions and preparing charts of Latin conjugations.

Miss Schibsbey.

## Science.

They continued their individual work in the making of alloys. The three they have succeeded with have been two kinds of solder and one kind of pewter. Two of the class are still trying to secure heat enough without oxidation of the tin or copper to get a mixture of these two. In writing their records of the making of the simplest compound, I found that they disregard easily the numerical proportions taken and leave out entirely the precautions they used to avoid oxidation, and the particular method used in moulding or in making sheets of the metal. Suggestion is needed in order to get a complete record of work. They are next going to take a fusible metal in order to get a striking example of the lowering of the melting point in an alloy where this low melting point is of great practical advantage; e.g. in its use in all electrical connections.

Miss Camp.

## Art Work.

They have commenced working in still life. The principal motive is composition. I appoint a committee whose duty it is to arrange for the study. I find that this plan works very well. The children have had no water color work in two years and they seem now to be just at the right age to take it up. They asked a good many questions about primary colors, etc. so that I am going to give them a good deal of the scientific side

Miss Cushman.

## Latin.

They have learned Horace Ode xiv, book I--0 navis, etc. They have used it for analysis and the study of grammatical forms.

Miss Schibsby.

## Science.

Our work this week has been on the absorption of light, some notions of a molecular theory for the constitution of matter and a beginning of spectrum analysis.

I first had the class compare the spectrum of white light with the spectrum of light which had passed through a red glass. This was done by letting the light from a fish tail burner pass through a vertical slit the lower half of which was covered by a red glass and then observing some couple of meters away with the prism. The members of the class then put on the board drawings of what they had seen and I asked for explanations of it. One or two explanations were given but none that was satisfactory. I suggested that perhaps the red glass in some way absorbed most of the light except the red and then illustrated the absorption of light by assuming a large space containing many wires tuned to  $c'$  and the notes  $c'$  and  $d'$  being sounded on one side of the space. The class saw that the vibrating air would do work on the wires set in motion, so that we should be likely on the other side of the space to hear  $d'$  much more distinctly than  $c'$ . I then asked if we had particles of glass instead of the strings and light instead of sound and if the absorption of light by the glass is similar to the absorption of the sound by the wires, what color of light would be given out by a red glass when heated. The right answer was given.

In order to get at the different sorts of spectra, I developed briefly the molecular theory, gave approximate values for the sizes of the molecules of hydrogen, oxygen and carbon dioxide, stated that these values may be rather the distances between the molecules than the diameters of the molecules themselves and showed how we could deduce a maximum value for the diameters of water molecules from the measurement that we spoke of in connection with the interferometer of the thickness of the black spot in a soap bubble. I also illustrated the size of this "diameter of the molecules" by the fact that it would take as many molecules laid side by side to make up a millimeter as it would millimeters to make up a kilometer, that is, the distance from 51st to 56th Sts.

I also spoke of the attraction of the molecules for each other and of their movements of translation and vibration. The motion of translation brought us up against the first law of motion, and we spent several minutes discussing it. The class seemed to see that if the molecules were far apart so that they would be very free to vibrate in their normal periods, and if we had a set of molecules all of the same kind, the light which they gave off should be nearly all of the same wave-length, and, therefore, should not be dispensed by passing through a prism; but just how clearly this last thought was grasped I do not feel sure, for when we looked at the spectrum of sodium light the class seemed to expect to see a dispersion as they did with white light. I had them put on the board drawings of what they saw when looking at the sodium spectrum and the drawings agreed very well.

For the work on absorption of light see the new Hastings and Beach General Physics, ch. 43. Arthur Taber Jones.

March 9, 1900.

## Art Work.

This group is now working out with me the architectural side of the clubhouse they propose building. I have talked with them along the side of the general principles of interior decoration. We discussed the subject of what should be brought into the house and decided that only articles that were either useful or beautiful had any excuse for existence. Under the head of useful articles we considered them from the standpoint of their technical qualities, as fitness for the purpose, good material, durability, strength, etc., and from the standpoint of aesthetic value we discussed form, color, consistency of style, fineness of material, etc. and we also took them up from the point of view of phonetic qualities, such as the decoration purpose of the object and colors employed.

~~History~~

Miss Cushman.

History (two weeks' report).

Their work the past week has covered the period up to the possession of New York by the British, the second time under William III.

We discussed the advantages and disadvantages of the manorial system and concluded with the Company that greater inducements must be offered to draw the colonists from their comfortable homes in Holland. I read to the class from "The Dutch Colonies" by Fiske of the offers of land and implements made to anyone who would come over and of the subsequent immigration of small farmers and the development of agriculture.

In connection with this we discussed the repeal of the laws on weaving which had had such a deadening effect on manufacturing up to this time, and as a result of this repeal the