

state, as to whether it is gaseous, liquid or solid, depends upon the amount of heat pressure. This was made very much easier by their interest in the subject of liquid air, two of the class having attended Tripler's lecture. I told them the aggregation theory of the formation of the earth. They contributed the origin of the earth as in a gaseous form. They did not then seem to be able to go on and suggest the cooling of the condition of the earth to a temperature at which life was possible, so I took it up from the other end and asked them what temperature they could endure and live. We then spoke of plants and animals and then came to the conclusion that a certain limit of temperature so far as we know absolutely limits the presence of life. In connection with the change from the liquid to the solid and to the gaseous, they were given two sets of experiments: one with mercury merely to see the change from the liquid to the gaseous and to the liquid again; in connection with the change from the liquid to the solid they took type metal--pewter and solder--bringing together both the crystallization on solidifying and expansion or contraction in cooling. They looked up the proportions of metals used in making these experiments and reported for the benefit of the class. Then the whole set of experiments were given to the whole class. Then each individual is to prepare the whole set without asking any questions and report at the end of three periods the amount done. They understand that they can have all the help they need but are to go from one thing to another without delay.

Miss Camp.

## Sewing.

Some of the children began scribble dolls and others continued the work they had already begun. The work on the looms is progressing very slowly and a few who have not succeeded in setting up their looms seem perfectly helpless.

Mrs. Paxter.

## French.

Groups IX. and X. have been given the same work as the other groups with more questions and some grammar work.

Mlle. Delpit.

## Art.

They have finished the hands and feet which they were moulding. They are casting some of them and have commenced to model a skull, modelling it to a skull just half.

Miss Ashman.

## History.

The children followed up the history of the colonies to the annulling of the different charters and the restoration of these under William and Mary. In doing this the parallel history of England was given as a necessary understanding to what was going on in the colonies. The children were given different topics to read up at home, such as the story of Charter Oak and the action of the Massachusetts Colony and were interested to see in what different ways the colonies met this demand to give up their charters. Then one hour was spent in writing them.

Beside the political development we spent one day on the educational side of the history of Massachusetts. The children looked up the history of Harvard College, how it was started and how schools were supported at that time, and the difference in the support of a grammar and a high school.

Miss Bacon.

## Latin.

They have continued the work in analysis, taking a little harder work and reading and using their vocabularies.

Miss Schibsy.

## Science.

One hour this week we spent largely in a review. I asked what light is. Everyone in the group believed it was a wave-motion, but at first no one could give a reason for believing so. When I suggested something about light in air and light in water they remembered that light goes faster in air than in water and some of them remembered how this was proven, but most of them did not see how this greater velocity in air showed that the cor-

muscular theory was wrong and left us with only some sort of a wave theory. After we had reviewed this our hour was nearly over. We had time, however, to begin a discussion of what light was waves of. Everyone seemed rather wary of saying that light was waves of air, but most of them did not know that it was waves of. I think they all believed that if we should exhaust the receiver of an air pump we could see through it just as well as before and they saw that if this were true it would show that light is not waves of air.

Our second hour we spent at Ryerson Physical Laboratory looking at an interferometer, seeing in it the fringes in white light and in sodium light, turning the fine adjustment and seeing the fringes go past and reviewing the method of determining wave-lengths with the interferometer.

Arthur Taber Jones.

Sanitation.

We reviewed quickly the different classes of rocks and how they were formed and then took up Mr. Salisbury's monograph on the Geology of Chicago, examined the maps and followed the changes in Lake Chicago. Then each child read in turn paragraphs describing the rocks <sup>and</sup> in the drift and <sup>make</sup> ~~from the~~ drawings showing the underlying character of the bed rock and the relation of the drift to the bed rock. In taking up these rocks the earth was first considered as being in a molten condition, then cooling <sup>and the</sup> shrinkage of the surface and folding of the crust. We then have what has formed the solid igneous rock. Then by the action of gases from the surrounding atmosphere, moisture, winds, etc. the igneous rocks crumbled, sediment collected and solidified under pressure, forming a new rock--metamorphic.



Group X.

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The sediment collected in water gave the stratified rocks, this again being, exposed to the atmosphere crumbling gave soil.

Miss Harmer.

The time has been spent in continuing their work on the playhouse and the making of furniture, each child going on with whatever he had begun on the days that he was at school.

Miss Scates. *MS*

## Social Occupations (a &amp; b).

They boiled their sap until it was molasses; then the molasses was boiled, until they saw that it would be brown sugar if continued, but as they all wanted to taste it, it was eaten up before becoming sugar. We have found out what the boiling of the sap does and as we have not enough cane to carry the process further, we will take up brown sugar and refine it.

In the sand box they made a plantation. Some of the children planted pieces of sugar cane and others made a clearing in the forest where the sap is to be extracted. Still another set of children made a fire to boil the sap into molasses. Sticks were laid and the fire lighted. The children had made a hole underneath their sticks and laid the sticks crosswise with spaces for air, but did not know why they did so. One of the children insisted the way to make a fire was this, but did not know why. The sticks were put closely together and they saw that they did not burn, but we did not have time to carry it out further, and show that air aided combustion.

The children played store with their paper money every day during the week and have become more familiar with making change of 5's and 10's and several of them are able to make any change from a dollar, using 5's and 10's, but only a few are able to make change with other numbers except under 10.

I read them another chapter of Black Beauty. This was read in connection with the discussion of the negroes who worked on the plantation. With Miss Dalling, they made out of blocks their negro's cabins and carried out in play a sugar plantation with its corps of workers. They have also made with her rails out of cardboard with wires for handles. In playing with blocks

they always call them by their length so as to become familiar with different sizes of blocks. *OK.*

Miss Andrews.

Cooking (a).

They made cocoa and took up number work in 3rds and 4ths .

Mrs. Feuling.

Handwork (a).

They are still working on freight cars. Most of them are very unevenly made because of careless use of the rulers. After consultation with Miss Andrews I let the children paste the sides together, so that they might see the need of more accurate measurements.

Miss Lackerstein.

Shop Work (a).

Have completed their carts and also the harrows begun long ago.

(b).

Have finished their small carts.

Miss Jones.

Sewing.

Have continued work already reported. *a*

Mrs. Feuling.

## History (a).

They divided their time between experimental work such as melting, reducing the copper ore on charcoal with the blow-pipe and repeating the work of the previous week in finding the time required for melting tin and lead. We also discussed the division of labor necessary to carry on smelting of ores. They enjoyed the game side of carrying out this division of labor very much. The two youngest children in the class were the only ones who did not readily carry out their part after having once discussed and divided the work. They have worked out the idea of the beginning of interchange between the people living in the mountain region and smelting ores and people in the fertile valley below raising wheat.

## Miss Camp.

## History (b).

This group has begun the examination of metals. They first took some copper wire, heated it and while hot hammered it. They have also melted tin and lead and have weighed out quantities of each to be melted together, comparing the results and also finding out what part of each combination was tin or lead. Thus, one child took 10 grams of tin and 5 of lead, total 15, of which  $\frac{1}{3}$  was lead.

On the history side they have discussed the finding of metals. Having placed their occurrence in semi-mountainous country, they went on to tell how men would collect it. One child said that he would go to another tribe and get people to work for him and in return would give him things. I asked him how he would

go to work to get men to do it and he said: "Oh, just ask them; they'd like the things." I then suggested that one of the other children should play that he was from another tribe and they suggested that he might be looking for a lost sheep and not know his way. When it came to negotiating with him as to his working for the tribe, the child who had suggested it now said he would show him the way through the country and take him to his own tribe and was quite disinclined to have anyone in the concrete gather his ore. *for him -*

A half hour was spent in reading. One child would whisper a sentence in my ear, which I would write on the board for the others to read. *C K.*

Miss Hill.

Cooking (a & b).

Worked out their recipes for the cooking of cereals. They cooked cornmeal; proportions 5 to 1. IVa is to take up the vegetables next week.

Mrs. Feuling.

Reading (a).

Are getting on slowly. Paul is doing very much better; Jessie is not making much headway. I deferred their reading the long passage about the cave-men until they had worked more on the elements, an, at, etc. They read today about the cavemen and did pretty well.

Miss Lackerstein.

Shop Work (a).

Small bows and arrows; measured length for bow, also discovered how long the arrow should be. Held a shooting match.

Later finished arrows with

(b)

Prepared stock for loom.

Miss Jones.

Art Work.

They have been doing some illustrative work. They made their smelting places on the hillside in colors. Their idea of color seems to be much more vigorous after the rest they have had while working in clay and they took hold of the work with much interest. Two of the children came up and spent an extra hour working by themselves. One of these chose as his subject the Hunting of the Mastodon and the other a Sunset on the Water. They wanted also to draw a picture of little Mok making his arrow heads.

Miss Cushman.

## History (a).

This week they have spent most of their time on the life of Columbus, looking at copies of the old maps of his day and pointing out the places which are like our modern maps, chiefly Spain and the northern part of Africa and observing particularly what countries were put down on the same lines of latitude.

I told them of Columbus' long search for some one to fit out ships for him to use in trying to reach Japan by sailing west across the Atlantic; of his visit to Portugal where the councilors of the king thought it a foolhardy scheme, and that it was better for them to stick to Africa and the route around the Cape of Good Hope and of the ships fitted out <sup>secretly</sup> by Portugal to test the soundness of Columbus' views, and of Columbus' sudden departure on hearing of it.

Miss Hill.

## History (b).

They continued the story of Columbus. The children ~~XXXX~~ retold what had been told them of his early life, of his long search for some one to bear the expense of the voyage and finally of his success in Spain after eight years' waiting. I then asked them the real reason of Columbus' desire and they told me he wanted to get the gold and spices of India and that he wanted to discover a new land. Then I told them of his religious interests, i.e., his desire for gold was to fit out an expedition against the Moors to recover the Holy Sepulcher. We discussed his start from Palos and the stop at the Canary Islands to repair the Pinta. I also told the children of the fear of the sailors on beholding the volcano of Teneriffe here, of Columbus'



scientific explanation. All but one of the children have seen the boats in Jackson Park. Some of them thought they were the real ships and so we went back to the time when Columbus sailed and found that wood would hardly have lasted so long.

I told them of the character of Columbus' sailors, that they were induced to go with him by being given their freedom from prison and even then some had to be made to go and we foretold the difficulties that would come.

One period was spent in reading from Robinson Crusoe, in which they are as interested a second time apparently as they were when they read it alone. One period was spent in writing. I gave them sentences about their history with words omitted, which they were to supply.

Miss Runyon.

Number Work.

One period was spent on number work. I asked each child to draw parallelograms 3 x 6 inches and have them exact, then to divide the first into two, the second into four and the third into twelve equal parts. All but two of the children knew how to go to work. Two or three did not know the difference between  $\frac{1}{4}$  and  $\frac{1}{2}$  inch in length. Only one or two were exact in their measurements, but showed that they realized this by measuring their oblongs in different ways without being told to do so and began to correct the drawing. Only two showed indifference to exactness and the desire to get the thing done rather than to do it right. When the parallelograms were finished, I asked them to express in fractions the different parts,  $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{12}$  and then indicated 3 of the 12th parts and asked them to express

that in a fraction, etc. The parts above 1, that is,  $3/12$  or  $2/12$  seemed a little difficult for them and I told them how to express it by referring to their cooking, where they measured more than half a cup or  $1/3$  cup.

Miss Runyon.

Science (a).

They worked on their compasses to find out why it dips. They are to move their compasses over the bar magnet, also cover the bar magnet with filings and using a model of the earth show what a needle would do if the earth acts as if it had a bar magnet thrust through it.

Miss Camp.

(b).

They finished their experiment made to show what a solution is and that a solid, liquid and a gas can act in the same way that a solid or liquid can. This was not very successful and will not be repeated a second time, as the children seem to be too young to be able to isolate the important factors contained in such an experiment.

Miss Runyon having found that they needed a review of generalization of the earth and the solar system, we summed up the earth's place--the fact that it takes 365 days to pass around the sun while the planets between it and the sun revolve in a less time and those behind it revolve in a longer time. In talking over the fact of there being other worlds than ours having the same relation to the sun, the children expressed a great desire to go over and find what was there, but were so firmly convinced that they were tied to the earth by gravity

that they could not get to the other worlds, even if the air between were thick enough to enable them to breathe.

Miss Camp.

Science (b).

They discussed the relations of the earth to the sun and the forces of gravitation acting between the earth and the sun as well as between objects on the earth. The fact was brought out that the earth was not pulled into the sun on account of the force of inertia. Most of the children thought it was the moon's pulling the earth back, but when shown the earth and moon in their relations, that the moon was sometimes on the same side of the earth as the sun, they saw it would be foolish and that even if it were on the opposite side, so small a body would not make any great difference. Then one of the children suggested it was on account of the earth's going around its path so fast that it could not fall into the sun.

They talked about how gravity could be made useful to men as a force to create power and one of the children suggested the idea of perpetual motion from a wheel weighted all around. One of the children said that if the wheel had paddles and water dropped on it, it would turn. We then went on to discuss the real source of water power and they saw that it was due to gravity.

Miss Andrews.

**Working (a)****Meat (Continued) Composition, Methods of Cooking.**

Experiments were made with small pieces of meat in the following ways.

1. Meat in cold water.
2. " " " " and heat gradually.
3. " " boiling water and **boak** slowly.
4. " " " " " boil rapidly.
5. " " cold salt "
6. Fat of meat in cold water and heat slightly.

The experiments were written on the board and each child read the one assigned him before doing the work. In each case the child was asked to observe carefully the appearance of the meat and of the water both before and after the experiment, and to tell the class just what he had found out by his work.

Experiment number 6 was to find out the form of the fat as it was seen on the surface of the water when separated from the connective tissue. When the meat was heated a white scum was found on the surface of the water; this was talked about and the children thought it appeared to be similar to albumen in eggs and milk with which they had worked. It had coagulated with heat in the same way and it was decided that there was albumen in meat. The bundles of fibres were seen by washing the meat for some time in cold water.

Beef tea was to be prepared for luncheon and the best method for extracting the juices of the meat was found from the experiments to be that of soaking in cold water and gradual heating. Potatoes were boiled and cocoa made. Number Work: If it takes  $\frac{2}{3}$  cup milk to make cocoa for 1 person, how much will it take for 7?

O.K.

Miss Tough.

## Cooking (b)

Last week VIIa cooked Vb's luncheon and the lesson was given up to analyzing milk. It was not proposed to have these children try the quantitative analysis but they were anxious to find out just how much of each constituent was in the milk. They planned their work almost independently and made a list of the apparatus needed. Two children took the list and collected it from the different laboratories; fitted corks, connected tubing, etc. One glass rod did not slant in the proper direction; so they brought down to the kitchen a Bunsen burner and bent the rod. They had been distilling water in their science work and begged to be permitted to condense the water as it evaporated from the milk, so that they might put the different parts together again after they had obtained the weight. The scales were balanced, the beaker weighed, a sample of milk weighed and record made. The milk was evaporated to dryness. There was not time for the second weighing to obtain weight of water. Sample reserved for next lesson. Second lesson was Valentine day and the children had only time enough to prepare and eat their luncheon.

Miss Harmer. .

## Textiles.(b).

They are finishing their work-baskets and spinning at home the thread for the cloth of which the needle books are to be made. The children are each one planning to make some one thing to complete Beth's workbasket which was left unfinished.

Miss Harmer.

## Shop Work (a &amp; b).

Measured wood for their game  $8 \frac{1}{2} \times 8 \frac{1}{2}$  inches. This

wood is hollowed out so as to leave spaces for 36 marbles in groups of 9's and the game is played by having different colored marbles and moving them something like checkers. The children also prepared the wood for their large sail-boat which is to be made later.

Miss Jones.

Art Work (a & b).

Have not quite finished their clay work, which will be reported upon when completed.

Miss Crushman.

## History.

We have summed up the life of John Smith and the story of Pocahontas. The summary was done by getting each child to tell something, which he considered important in the life of John Smith and then find a word to express the kind of man that would do such a thing or to characterize the action. The events of the life taken up this week were: his term as president of the colony, his famous order that "he that would not work should not eat", his coming to Powhatan for corn, being refused, then withdrawing to wait until the morning, to try again and the secret warning given by Pocahontas that her father had sent men to attack them. We took up the prompt action of Smith in meeting the attack, his success in getting the corn; then his appeal to another chief who met him cordially and promised corn but at the same time his warriors surrounded Smith and his men, and Smith's action in grasping the chief by his scalp-lock and threatening to shoot until he ordered his warriors to withdraw. We had finally the news brought that he was deposed because his enemies reported that he was the cause of lack of financial success of the colony, his discouragement but refusal to give up his command until the new government should arrive; then his wound and return to London. The children were told that although he did not return to Virginia he came back and explored the New England coast and gave the name "New England" to that part of the country.

The children still read with much difficulty and with not very much interest even when interested in the thing given them to read. There is improvement but it is very slow. I have tried them on several different books trying to find one

that would be suitable for them and at the same time helpful in their history, but most of them seem too hard. On Friday they read from Guerber's Story of the Thirteen Colonies, and although it was hard for them, the majority of children thought they would rather have that as a reading book than something easier.

Miss Bunyon.

### Physiography.

We took up the rivers that John Smith explored about Virginia. On the relief map the children found the York, Rappahannock, the James and Potomac and traced each to its source, thinking as they did so of the facts brought out last week concerning the work of rivers. Then we took up what would become of the sediment carried by rivers; when rivers would wear away the coast and when the sediment would be built up along the edge of the continent, and made the observation that along the Virginia coast the ocean came far up into the land. We decided that this might be either because the river had worn away the earth and soil there, or because the land along the coast had sunk. The reason given why Smith explored these rivers was that he wanted to find a waterway through the continent and the children traced the rivers as far as they could and they saw how short a portage they could find to the next river leading further on. They <sup>followed</sup> found the Potomac up in the mountains, then crossed the Allegheny, down the Ohio to the Mississippi and so ~~xxx~~ to the Gulf. Isabel picked out the Missouri on the opposite side of the Mississippi and followed it through the Rockies and across to the Columbia and so to the Pacific and seemed to feel that she had found the waterway across. Then I asked why this could not



be used for navigation and the children thought of the falls that must occur along the course. They also looked up again the route across the St. Lawrence and the Great Lakes.

Miss Runyon.

#### Number Work.

They have continued their number work on wheatena requiring 7 times its bulk of water and using a 4th of a cup of cereal. Johnson was the only one who finished his work and he had only one or two mistakes. The children all find this is the hardest work they had done so far but did not object to it on that account.

Miss Runyon.

#### Science.

With the blast lamp they melted their pewter again and with the extra heat which the lamp afforded were able to melt the copper and antimony. They then moulded the pewter into sheets by smoking two pieces of zinc and pouring the molten metal on one and pressing the other upon it. This made the pewter into very thin sheets. They cut these into circles and hammered them into tiny plates and bowls.

Miss Andrews.

#### Cooking.

They separated milk for quantitative analysis.

Miss Harmer.

#### Textile Work.

The reel planned last year was brought in from the shop.

The children tried to use it in winding off the thread they had spun but found the spindle sticks too large in diameter for the bobbin frame of the reel. A few other changes were suggested by the children which they will carry out in the shop. They went on with their workbaskets while waiting for the frame for their looms.

Miss Harmer.

Cooking.

Same as Va.

Art Work.

have not quite finished their clay bas-reliefs.

Miss Cushman.

German (b)

I have been drilling them on phonetics and have given them a few other things. I gave them the vowel sounds, then pronounced certain words and asked them to pick out the different sounds. They had great difficulty with this, but some now seem to have the connection between the sounds and the letters.

Miss Schibsby.

Science (a).

Most of this group have finished their experiment to find the relative amounts of crude gluten in different kinds of flour. They used pastry and rye flour. They are having ~~a little~~ difficulty in getting their quantities of gluten to a percentage where the relation is not a simple one like  $1/2$  or  $1/5$ . *G.R.*

Miss Hill.

-(b)

This group cooked a weighed quantity of meat, heated it to dryness and weighed again to find the amount of water lost. Like VIIa they are having ~~a little~~ difficulty in reducing their results to percentages. Their number work has been expressing fractions as 100ths. *A.R.*

Miss Hill.

Cooking (a).

They prepared their own and Vb's luncheon--"hamburg steak and rice. Rice cooked in large quantity as a review. Meat being an animal food substance it was not examined for cellulose or starch. In order to find out the best cooking temperature it was tested with boiling water. The surface of the meat was seen to whiten and harden similar to the albumen in egg. From this,

the children with a few directed questions gave directions for the preparation of Hamburg steak: High temperature to sear and thus retain juices. After searing a low temperature to keep meat tender.

In the next lesson we tried the effect of cold water on meat. The meat lost its color and the water became a rich red. The children gave directions for cooking of beef tea: First, soaking in cold water and then heating slowly to gradually draw out juices. The red liquid was boiled and the hardening of the albumen in a scum on the surface was observed. This showed how beef tea was deprived of the same amount of nutriment it contained if at any time in the cooking the temperature was raised above simmering or 180°.

For luncheon VIIa prepared the beef tea and strained out the meat. Vb made a tomato sauce which was well seasoned as the juices of the meat had been extracted. Vb also prepared macaroni with white sauce, cooking in a large quantity. Number work was brought in by multiplying the recipe and planning enough to serve two groups.

Miss Harmer.

Cooking (b).

Meat (continued).

The study of the cuts of meat was continued. Each child made a rough drawing showing the outline of the ox, with the skeleton, and locating the parts with which they were familiar.

For luncheon mutton chops were broiled and creamed potatoes and cocoa prepared.

Number Work: If it takes  $\frac{2}{3}$  cup milk to make cocoa for 1 person,

how much will it take for 8? From the following recipe which is enough for 2 people, make creamed potatoes for 8:

2 potatoes, 1 1/2 tablespoons flour; 1/2 as much butter as flour; 1 1/2 teaspoons salt; 2/3 cup milk.

O.K. Miss Tough.

#### Number Work.

They have been working with decimals, especially the writing of them. One day was spent in working in percentage.

Miss Lackerstein.

#### Art Work. (a).

I made a sketch for them in clay of a boy in a skating cap. I took the whole period and let them watch me do it. Then I let some boy pose and let the class work without any suggestion.

Miss Cushman.

## Latin.

We are studying grammar and each child is making his own grammar and putting in the definitions of nouns, adjectives etc. I showed them the remains of the declension in English and how the Latin endings determine the place of the word in the sentence. We have had the actor and object cases of three declensions in the singular and these have been put in their books. They have seemed to like this work. We have also had the fable about The Mouse and the Lion.

## Fabula de Leone et de Mure.

Undo die leo, rex animalium, in sua caverna dormiebat. Circum leonem mures saltabant, et forte parvus mus in capite leonis cecidit. Leo e somno excitatus est et parvum murem cepit. Parvus mus erat territus, flevit, "O leo, rex animalium, me libera! Tum ego semper servus tuus ero." Leo risit, et parvum murum liberavit.

Faucis diebus postea, leo in silvam ivit et in rete captus est et non potuit se liberare. Tum fecit magnum clamorem. Mus audivit et vocem leonis, amici sui, recognovit. Vox ad leonem preperavit et cum suis dentibus acutis rete perrosit, et leonem liberavit.

Miss Schibsby.

## Science.

They have taken up a review in preparation for their visit to Armour next day and the things they would want to see actually at work. They gave them in the following order: A motor, dynamo, galvanometer (which they called a tester), storage battery, and apparatus for wireless telegraphy.

Miss Camp.

## Cooking.

Same as VIIb.

## Textiles.

The felt experiments are being finished in free hour. We talked about other methods of making cloth similar to felt.

We talked about other methods of making cloth similar to felt making. One of the Hawaiian school papers was read which described the beating of the tapa. Samples of tapa were examined and the methods of applying colors and designs were obtained from samples and written directions in the book. They mentioned the eastern method of carved blocks and dyes used by Groups IIIa & b last year.

Miss Harmer.

## History.

We have continued the story of the first winter at Plymouth, discussing the questions of shelter, food, the losses by death and the establishment of friendly relations with the Indians. The children have asked various questions as to exact details, such as the dimensions of the Common House, the names of the children in the colony, the ages of prominent men, etc. They are invariably surprised to be told that a man of importance, Standish or Winslow for instance, was not "awfully old". They were sceptical with regard to the first wash day on the ground that it was too cold, that the clothes would freeze in the water. When one child suggested that perhaps they used salt water, which would not freeze, another objected that it would not be fit for washing. The difficulties were finally removed by discovering that there was a pool of fresh water for washing and kettles and fuel for heating. Before this point was reached, one child remarked that the histories must cheat you sometimes anyhow. They were interested in Winslow's kindly references to the Indians as loving, faithful and just, but seemed to feel that even with the continuance of kind ~~friend~~ treatment from the whites, the Indians must sooner or later resent their encroachment and become hostile.

Miss Hoblett.

## Latin.

We have gone on with the story of Jason and the Argonautic Expedition. We have gotten as far as where Jason builds his ship. In grammar work we have begun on verbs. I called their atten-



tion to the personal endings and their value. We took examples from all the stories we had had. From these they argued that it always meant they and must always mean we, etc. In addition we have had the story of the Lion and the Mouse for sight work and De Nasica et Ennio.

Erat olim vir Romanus, nomine Nasica. Ennius, poeta Romanus, erat amicus Nasicae. Uno die Nasica venit ad casam Ennii, et eum quaesivit. Serva venit ad portam et dixit, "Ennius non est domi". Sed Nasica eum ad fenestram viderat. Paucis diebus postea Ennius ad Nasicam ivit. Nasica ipse ad portam venit et dixit, "Ego non sum domi." "Quid?" dixit Ennius iratus, "ego non te cognosco?" "Tu es homo impudens. Ego te ad fenestram videram, tuam servam tamen credidi. Tu mihi ipsi non credis."

Miss Schibsby.

#### Science.

On account of the holiday they have had only one period, which was spent in a visit to Armour. They saw three kinds of galvanometers and while looking for the instruments asked for the first time how electricity was measured, that is, the name of the unit, for they knew it was measured by the work it did. They saw also a very powerful electro-magnet, which gave them their first conception of magnetism as a real force. They could feel the steel driver which it took all their strength to keep away go in a curve between the two poles of the magnet. One of the children asked in the greatest excitement, "What is happening between those two pieces of metal?" They also saw a storage battery and switch-board and lamp rack used for regulating the amount of current needed for any particular use. They saw two kinds of dynamos alternating and direct and electro-motors with an armature of two kinds and got clearly the idea that a motor

used to generate current was called a dynamo, or a dynamo could be used as a motor. One of the children went home and with a steam engine made his motor into a dynamo. The girls showed very little interest in comparison with the boys but all came home with the determination to make a galvanometer in the shop and also if they could get the parts, a motor and a dynamo. In the course of their visit they were taken to the shop where a motor is used to run a planer and a jig-saw. They showed the most intense interest, saying over and over, "How much we could do if we only had one!" and carried away as their greatest treasure small curls of wood sawed for them.

Miss Camp.

#### Number Work.

We spent most of the time on example reducing fractions to a common denominator and in clearing of fractions. I gave them  $\frac{2}{3}$  equals  $\frac{4x}{7}$  to find value of  $x$ ; so they had to know the first thing was to reduce these fractions to a common denominator and then clear of fractions. I had a great deal of difficulty in making them understand what clearing of fractions meant. I have made them write out everything they did and in nearly every case in clearing of fractions they said "throw away the denominator." I had some difficulty in showing them that they multiplied both terms by a common denominator which of course results in giving an equality of fractions and that they did not throw away the denominator. I asked them to make up examples in Proportion and told them that I wished them to go over in their minds just how we happened to be working on Proportion and make up examples by this. Thus, the intensity of light varies in-

versely as the square of the distance. In only two or three cases did they give the correct example because they did not think clearly and mixed up some work which Mr. Jones had given them in their Physics. When the example was correct, it was simply a plain example in Proportion without remembering that the square of the distance was involved. When I called their attention to the fact that the example which they had given me was not of the character they had worked out, they all remembered the fact and simply said they "didn't think". I have asked them to continue thinking about a statement for the use of Proportion and the following was given me by Fred, which I think particularly good.

"If you have given two quantities of different kinds having a certain relation to each other and a third quantity of one of the kinds, you can find a fourth quantity which will have the same relation to the third that the second has to the first."

Miss Moore.

Art Work.

They are casting some of the hands and feet and skulls which they modeled in clay.

Miss Cushman.

Latin.

They have read further in their books analyzing and studying the value of the different cases and noun and verb forms. I have also given them the twelfth ode of the first book of Horace and a few stories at sight.

Miss Schibbsby.

Science.

This week we talked about the ether and began to consider the spectrum and color. The ether seemed to be especially interesting and more than half the class had note-books and used them.

I asked what they supposed would happen if an electric bell were hung in the receiver of an air-pump and the receiver then exhausted. They thought that after the air was pumped out we should still see the hammer hitting away at the bell but that we should no longer hear it, which is true, as of course it is, would show that light is not waves of air. I then told them that there is a law  $v = \sqrt{\frac{e}{d}}$ , where  $v$  is the velocity of propagation of a wave motion in any medium,  $e$  the elasticity of the medium and  $d$  its density, so that if light were waves of air it must have a velocity nearly the same as that of sound. I said nothing about the law in this form not being strictly correct for sound in air. To show that light and sound do not travel with the same speed, several mentioned seeing the smoke from a gun before hearing the report, and when I spoke of lightning, they knew that we see the flash before we hear the thunder.

I then gave the name ether and illustrated its small mass in two ways. a) by writing on the board the mass of the earth ( $6.10^{24}$  Kg.) and then the guesses of the members of the class

as to the mass of an equal volume of ether (in reality not more than 500 kg.) and b) by telling that the ether having the same mass as one cubic millimeter of cork would cover Lake Michigan five miles deep. The guesses at the mass of a ball of ether the size of the earth were very good, almost all being of the right order of magnitude, a few, however, very much too small. Ralph wanted to know if it "wouldn't be a good substance to fill a balloon with", and one or two wanted to know if we could in some way get a glass full of ether. I also told that the ether is probably more rigid than the hardest steel, and yet the earth, planets, comets go through it for thousands of years without, so far as we can tell, being at all slowed up.

We next turned our attention to the spectrum and color. I asked whether the colors of the spectrum are produced by the prism or are already existing, only mixed up so that we can't recognize them, in white light. Most of the group thought that the colors were all in the white light to begin with. We saw this was the case (a) by compounding, with a second prism the light analyzed by another, (b) by compounding with a lens the light analyzed by a prism, and (c) by reflecting the ~~prism~~ spectrum from a mirror that was being quickly shaken. I also showed a disc painted red, green and blue and spun it round on a pin producing a grayish effect.

We next passed on to another question: What is it that causes the color of a body. We darkened the room and I showed in a sodium light some cards painted with different colors. When I turned on the white light, the change was so magical that one or two remarked it was a good trick. We also while the room was

darkened, threw the spectrum into the room and held first in the blue and then in the red a card with blue, white, black, red bands on it. On account of having the door somewhat open to let the spectrum in, the effect was not so marked as it might be. When we turned to the discussion no one suggested the explanation that the color of bodies is due to their absorbing in some way part of the light and diffusing the rest, but when I suggested this they saw that it might be so. We shall come back to this in another connection.

When I asked what color was bent most, I was rather surprised that not all were certain whether red or blue was uppermost in the spectrum that we had looked at a few minutes before. As another illustration that blue is bent more than red, I had painted on a black ground Fig. I. On looking at this with the prism, refracting angle up, the appearance is that of Figure 2. I then showed another card with a white horizontal line on a black ground. On looking at this through the prism angle up the blue end of the spectrum is seen above and the red below. I asked the class to think about this and explain it next time.

We next turned to lenses and I showed a sort of spectrum with the edge of a lens and showed how the blue should come to a focus nearer the lens than the red, told of Ruler's suggestion that since there are achromatic lenses in our eyes, achromatic lenses are possible and told how Dolland succeeded in 1757 in making an achromatic lens.

I then supposed that we let part of the light of our spectrum through a slit and measured its wave-length, and showed that we can see only about one octave, while we can hear through-

out some ten octaves. Fred remembered the approximate lengths that I gave some time ago of waves at the two ends of the visible spectrum.

I also mentioned the ultra-violet and infra-red spectra.

Arthur Taber Jones.

Sanitation.

After having worked out the formation of the bed rock of Chicago from Mr. Salisbury's monograph, it was related to the rock formation in America as a whole, being a review of work done in geology last year: the Archaean forming the V around Hudson Bay, the carboniferous showing the coal regions, the area of stratified rock including the Niagara limestone formation which covers Chicago.

The formation of Lake Chicago by the melting of the glaciers was worked out from Mr. Salisbury's book and an outline map was made showing the outlet into the Mississippi. The cutting down of the Desplaines valley by the waters from Lake Chicago, the lowering 30 ft. of the lake, i.e. from the level of the top of the present bluffs to the level of Lake Michigan, the retreating of the glaciers to the north forming an outlet into the St. Lawrence system, it being a lower level than the Desplaines. A second map was drawn showing this. A third map was made showing the present drainage as changed by the Drainage Canal. The children are now drawing a map of the city showing the general lines of drainage as indicated by the undulating surface of the bed rock, to show if possible whether the conditions of natural drainage have effected in any way the character of the different localities. The children spent an hour in finishing

their written records, covering the following topics.

1. Situation etc. of country house.
2. Formation of soil.
3. Maps showing outlet of Lake Chicago and Lake Michigan.  
present drainage.
4. Character of bed rock and soil of city of Chicago.

Miss Harmer.