the French use the article where the English omit it and that in French the article and adjective vary with the noun.

Mlle. Delpit.

Science:

We took up this week two objections to our wave theory of light: first, that light does not go around corners, while, sound, which we know is a wave motion, does; and, second, polarization.

In answering the first objection I spoke of a simple diffraction experiment showing that light does, to some extent, bend around corners, and also attempted to show by means of a sensitive flame that an object may cast a sound shadow. But the flame I had was not sensitive enough really to illustrate the point, although it showed how the point might be illustrated. I called attention to a decided sound shadow cast by some low hills a few years ago when there was an explosion on the shores; and I gave the wave lengths of middle C and of the highest and lowest notes that we can hear. I then gave the longest and shortest wave-lengths, if they be wave-lengths, of light, and tried to bring out the idea that the amount of waves spread out after going through an opening depends on the relation between the wave-length and the size of the opening, and that, therefore, since the light wave-lengths, or what we call such, are infinitesimal compared with the sound wave-lengths, the very small amount of bending of the light is what we shall expect, so that as a matter of fact the approximate rectilinear propagation of light, instead of being an objection to our theory, really supports it.

The second objection that we took up was polarization. Of course I had to tell what polarization is and then finding that our
wave theory would not explain it, we looked at the three different sorts of wave motion that we are familiar with, viz., water waves, sound waves and waves in a stretched rope, noting in each case the direction of the propagation of the wave motion and the approximate direction of motion of the separate particles. Thus we saw that we had been assuming that wave motion in light is like that in sound although there was no necessity for our doing so. I then produced a card with several parallel slits in it and began to suggest an explanation of polarization on a modified wave-theory of light and before I was half-way through my suggestion, more than one in the class saw what the explanation was going to be.

After a summary of what we had done and where we stood as to a theory of light and after a repetition asked for by two or three members of the class, of the reason that greater velocity of light in air would overthrow the corpuscular theory, while greater velocity in water would overthrow a wave-theory, we had just time to begin on interference by seeing Newton's rings, which we produced at the contact of two lenses.

The interest in the work continues and the questions asked me are numerous and worth answering. The chief difficulty I have is answering the questions as fast as they are put.

Arthur Taber Jones.
We started in this week to make individual play-houses to take home, using large boxes. The older children have measured all their paper and cut it using rulers. The little children tacked down matting in their houses, made a table for the dining-room by nailing legs on a block and chairs by nailing a back to a cube and putting on a leather seat with brass-handed tacks.

The older children made tables and chairs and in addition to the work mentioned above measured and sawed the wood for them and put them together and shellac'd them. They are going to upholster their seats with leatherette and cotton. Some of the children made carpenter's tool chests out of manilla paper and cut out the tools they thought would be necessary to go with it.

They had a new song in connection with the carpenter's work showing the different activities. A great many were suggested and dramatized by the children. They went through the process of showing how the carpenters went up a ladder and pulled up heavy boards.

Miss Cushman took charge of the drawing on Tuesday and the children drew houses and put in all the little details of sidewalks, lamp posts, etc. She suggested how much better it would be to draw the ground first and then build the houses on the ground. With the smaller children this meant nothing but the older ones seemed to grasp the suggestion and have carried it out ever since.

We tried using the voice and hands in accordance with Mr. Peterson's suggestion, instead of the piano, to mark the rhythm, but I found that the older children could use it in marching if only three marched together. They could not use it when going as a body and did not take as much interest in it. They did not seem to catch the rhythm as well.
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We cooked cracked wheat. The older children remembered the proportion of water and did not have to be directed.

Miss Scates. OK
Once a week they recite together and then they usually play some number games. This week a played against b and each wrote its score on the board under the captain's name and at the end of the game added up the score to see which beat. When I have them play this way I have the rings count for small numbers in order that they may not amount to too much for them to add and also to bring in different numbers in adding as 2's and 3's.

The emphasis has been placed this week on number work and I think the majority of the class has the 1/2's and 1/4's straightened out. I cut an apple into 1/4's and then into 1/8's and asked them which were larger 4/8 or 2/4, 1/8 or 1/4, and as they said which they would rather have I gave them the piece of apple. All got it right except one who said he would rather have 1/8 than 1/4. Then we put the pieces together and found out how many 8ths were were in 2 apples and after they had eaten 11/8 found out how many 8ths were left from the two apples.

It had been some time since they had used the ruler in measurements. So we took it up again measuring the different things in the room. Some of the children were able to measure the window sill but most of them could not keep in their minds measurements for a longer distance using a lb inch rule.

They played with their freight cars, pretending that a certain point was Chicago and drawing tracks on the floor to a place in the south where they had their cotton bales stored and thence to a mill in the north where the cotton was taken to be made into cloth. When it was asked whether the cars would go empty from Chicago to the south, the children thought that the southern people might like something that grew on the farms here and suggested corn. The cars were loaded with corn and taken to the southern plantation.
and unloaded and the bales of cotton were put into the cars and brought to the mill. At the mill the children had little rolls of white cotton cloth which they sent back to the south in exchange for the bales. They thought they would not need as much weight of cloth as they received cotton, as it was a good deal of work to make the cloth, so they decided they would keep some of the cloth and send some.

They thought they would not want all of their cloth white, so they are dyeing some of it purple with logwood.

Miss Andrews.

Cooking:

Corn-starch and dates reviewed. Comparison of starch and sugar. Starch mixed with cold water. Children said it looked milky. Sugar and water—sugar dissolves. One child was told to cook the mixture of starch and water. Effect of heat? Thickened the mixture and changed color. What two things do we need to cook starch? Water and heat. Starch grains as seen through the microscope recalled. Drawing made on the board to show the effect of hot water on a mass of grains. What would happen if the water touched only the outer grains? They would burst and the inner ones would not. What would then be formed? A lump. How can we prevent lumping? Recipe given: 2 T sugar, 2 T starch, 1/2 C milk, 1 s. salt; dates cut up into fourths.

Mrs. Baxter.

Sewing:

Have continued work on the holders for the kitchen.

Mrs. Feuling.
About three periods were spent in extending their knowledge of the nature and use of metals mentioned in last week's report. We started out at the beginning of the week to take up again what we had already done earlier in the fall incidentally in connection with the formation of caves, that is, the nature of the changes going on in the rocks that would expose new surfaces. The only two repeated this time were the action of water in freezing and in washing away soil already formed, thus exposing new surfaces of metal-bearing rock. With this they were given various specimens of copper ore in which the native copper was so disintegrated that they could break off little bits and hammer it to prove that it was metal or polish it to "get the red", as they call the copper color. The metals that they have tested as they have the copper are lead and tin. They applied without very much suggestion the method of melting to get the native copper from the stone and volunteered that they would have to have a very hot fire to get this result.

They have begun making their "fire-place", as they call them, for smelting, knowing that they will have to break metal which has already been taken out of the rock. They already had without exception the idea of building up the chaj in stones around the fire to keep the heat in and did this so thoroughly that no chinks were left, as has always been the case before, for the entrance of air at the base of the fire. By asking them what would happen if the fire were entirely enclosed, I got the idea from them that the fire would need air and by using the example of the heating in the furnaces and stoves in the shop and in the gymnasium, they added the fact that the entrance of this air to the fire must be from be-
low. One child wanted to cover up the fire entirely and have a chimney hole, but as he could give no reason for doing so, the child working with him refused to accept the suggestion. They will be left to formulate the final form of a covered smelting place with a chimney for draft gradually.

They started their fires and found that the fine wood they used blazed very fiercely with a great deal of smoke. One child remarked that he would like to cover it and keep the flares in.

Miss Camp.

(b)

They spent most of the week in number work and in geography. They have added together different numbers, taking different flocks of sheep or tribes of different numbers of people and adding them together. They can add very easily in tens up to forty. In geography I told them to pick out on the relief globe the places that they thought would be good for their tribes with the sheep. The places picked out were the north of Africa, Arabia and the northern part of Asia, because these were flat. It is a singular fact that these are the chief places on the globe now occupied by nomadic tribes. Our talk has been about the supply of water that would be needed and how they could be got from springs and wells.

Miss Hill.

Sewing: Continued work of last week. The children are beginning to knit wash-cloths.

Cooking: Group IVth cooked cocoa. The separation of the fine grains of cocoa by mixing with the coarser grains of sugar was talked of. The children told that starch grains could also be separated by cold water. Proportions 1 T cocoa, 1 T sugar, 1/2s salt, 1/2c milk. The relations of 4ths to 3rds was talked of. Ex. Which is more—2/5 cup or 1/2 cup? Also relation of 4th to 1/2's. Ex. In 1/2 cup milk how many 4ths?

Mrs. Peuling.
They have spent a good deal of time on the measurements of the circles with reference to latitude and longitude. We took up the measurements of circles by degrees and I asked them if the number would be the same in all circles and at first they thought not. Then I drew a large and a small circle so that one diameter could go through the two, and they saw that each was divided into half by it and found by that that the measurement was a matter of proportion. We called the total number of degrees in a circle 360° and found that half of this would be 180° and that half of 180° would give 90°. When they got to 90 they said that half of 100 would be 50 and half of 90 would be 45, that is 5 less. They have drawn the circle and divided it into halves. Then I showed them how to divide it into quarters by taking the points at the center and then drawing arcs of equal circles from the ends of the diameter. In this way they divided their circle into quarters. One or two of the children have found 22 1/2 degrees.

In geography they have noted the large masses of land following them around the Equator and have noticed that there is more land north than south of the Equator.

Miss Hill.
History:

The explorations have been carried on until the Cape of Good Hope was rounded. I found that the life of the sea did not meet enough in the children's experience for them to realize it, so that I have had to get at it more by taking the different landings they would make and the new knowledge of materials they would carry back. We have taken up their contact with the natives, first, by the remaining, of one of their number for several months to learn the language and possibilities of commerce.

I wanted to take up the beginning of slavery, so asked the children's idea of what would be done when the sailors found groups of natives. They suggested that they would make arrangements for trade, having the people collect things for them. This of course came from their ideas of trade with the Indians. They were told that some of the sailors wanted to take some of the people back to show to the people in Portugal, and capture and persuasion were suggested as the means of carrying out this idea. Then I asked what they would do with them when they got them to Portugal. This seemed to trouble the children for a time. Some suggested that they put them in cages so that they would not run away, and when it was suggested that this was expensive, it was suggested that they would make them work for them. They were told that at first the black people who were taken to Portugal were very kindly treated and the people tried to make them Christians and some people adopted and brought up the children with their own; then gradually how they came to be useful as servants and how the idea of capturing and selling them originated. The children expressed without any affectation their sympathy with the negroes and yet seemed to feel that
the black people were not very different from monkeys and other ani-
mals of the country. I asked them if white people were ever sold
as slaves and they thought not. So I told them of the practice
in some countries in ancient times of selling, captives in war no
matter what their station in life.

The connection between the negroes of Africa and those of
America was made by asking them if they were related. The children
thought that most of the negroes in America came over voluntarily
later and then others thought that they were descendants of slaves.
I asked if anyone knew how long slavery existed in the United States
and Charlotte said they were free from the time of Lincoln.

We have made a list of the new fruits and animals found by
the sailors and brought to the knowledge of Europe and of the new
facts of knowledge, such as information about the sun at the equator,
that the continent of Africa could be rounded and the behavior of
currents in the sea.

I think the children need something more than words to help their
imagination in this study. The idea of the sea and of adventures at
sea does not seem to find much place in their experience, and the real
personage of Prince Henry, who does not go on explorations but di-
rects them from his observatory, does not give a vital enough inter-
est. I doubt whether the children have learned much that will remain
with them from the month's work beyond the geography and their
very general ideas about the physical forces. I think they have
missed somewhat the illustrations that they have been accustomed to
draw in the studio while they have been engaged on their clay work.

One period has been spent in reading to them from "Home Life
on an Ostrich Farm" by Annie Martin, which gives an excellent
picture of the ways of raising the ostrich and of getting its
feathers for sale.

Miss Runyon.
Science (a):

They magnetized their individual needles and found that they would float upon water and that sometimes the point pointed north and sometimes the head. The worked out with one large needle the attraction of opposite poles but have not formulated the results of their experiments. Miss Camp.

Science (b):

Have spent one hour in relating what they knew about the formation of the earth and of mountain chains in general to the secondary appearance of volcanoes. They have an idea of the hot liquid contents being forced out by the continued shrinkage of the earth. I gave them in a few words another explanation, that is, of the percolation of the water to the underlying heated layers of the rocks—being the popular explanation of the appearance of volcanoes along the seashore because of the occurrence of so much steam in the erupted lava. They were very much interested in examining the different kinds of lava. We had specimens in which disintegration had just begun to take place and then specimens in which the rock had largely crumbled leaving only the hard nodules. The other point dwelt upon was the difference in the appearance of the old and much weather-worn volcanoes and the smooth slope of the comparatively young one. Miss Camp.

Science (b):

Have finished softening their skins. A half hour was spent in listening to an account of the tanning processes that are now carried on by tanners and a half hour in writing a report. They wished to begin making glue and as this is too long a process to be taken up in schools some of them have decided to carry it on at home under my direction. We take only a few minutes of the science period at school in discussing what they shall do. Miss Andrews.
Cooking (a):


Talked over what had been done last week in the making of butter from the cream of the milk, classifying it as fat similar to that found in meat. Then the coagulating and thickening of milk were spoken of, and the cause given as the entrance of a minute plant from the air, which by its action in the milk formed an acid. The same result was found to be obtained by adding vinegar to milk. Then we talked about using any acid to do this, and rennet was explained to the children as a substance made from the lining of the calf's stomach; this was added to some milk, and the latter set aside for an hour when it was found to be thick. Then the thickened part was broken, it was found to divide itself into curd and whey. The whey was put into cheese cloth bags and hung up to drain off the whey. On examination this whey appeared to be watery, but the children found by tasting that it was more than that; they were told that it contained some salts. The curds will be examined next week.

Cocoa and Jervet were made and potatoes boiled. The butter made last week was served at luncheon with the potatoes. The children were inclined at first not to taste the butter on account of its whiteness, but when one had tried it and pronounced it "fine", the others were anxious to have their share, and were delighted to find that the butter they had made was as good (in flavor at least) as the "store" butter.

Number Work: If it takes $5/4$ cup of milk to make cocoa for one person, how much will it take for nine?

6A, Miss Young.
Cooking (b):

They reviewed what they knew of the composition of milk, that it contained 87% of water, 4% of fat, 4% of sugar and 1% of salt. In giving the composition in percentage they made the remark that percentage was so many parts of a dollar, and working it out as so many parts of a hundred parts, they found four parts were deficient in making up the whole. We compared sour and fresh milk and found the one to be in solid form separate from the surrounding liquid. The name casein was given. Lawrence had been to a cheese factory and gave a connected statement of how cheese is made.

"First you see it in a large bath tub. It is solid and they take a large wooden rake and rake it up and down. There is a small strainer in the bottom of the tub and they open it to let the water run off into buckets. They put the cheese into round--(mould was suggested) and put more buckets on top to press it down. Afterwards they take the cheese to the attic and then you see rows and rows of cheese--nothing but cheese."

They tested the milk and found the sweetness was gone replaced by an acid flavor. Vinegar was added to the milk to show the general effect of acid on it. The acid flavor was not desirable in cheese and rennet was given them to use in forming curd. Rennet was explained as being made from the inner lining of the calf's stomach, the digestive ferment, which makes milk a solid food as soon as it enters the stomach. The children suggested reasons for sipping milk slowly so as to form small curds which are easily broken up and dissolved in digestion.

The temperature for curding was next considered. Almost all the children suggested body temperature, and some of them knew this to be 96 or 98°. We found on a dairy thermometer that 89 Fahrenheit was high enough. We heated the milk, added the rennet, permitted the curd to form and strained the curd from the whey. Thomas said his
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Grandfather fed the whey to the pigs. "They just love it."
We examined pictures of colonial cheese presses, etc.

The review work for their luncheon was creamed chipped beef
and steamed rice. Miss Farmer.

Textiles:
They continued the making of their baskets for the school.
Miss Farmer.

Sewing:
They have continued the work last reported and I think no
report in sewing will be necessary until new work is started.

Miss Tough.
History:

The Jamestown colony was taken up by these children somewhat differently from last year's class. After telling them of the granting of land in the new world designated by lines of latitude, I told them that the people pomposing the colony sent out by the London Company were more than half gentlemen and asked them what a gentleman was at that time. Some suggested courteous, fine-looking and having lots of money as definitions. I told them that at that time it meant chiefly a man who did not work for a living and gave them the idea that they thought work with the hands was menial.

Then I read to them from "The Settlement of Virginia" in the Classical History series the instructions of the king and the company to the colony. We brought out the fact that all things were to be in common. I asked the children what they would expect to happen in a colony on this basis. Paul said he would expect a fight because "those old gentlemen wouldn't work and the rest of the people wouldn't want them to have what they raised". George said that he 'would just take what he raised and go off into the woods and eat it by himself'. Paul suggested that he "would have a hard time carrying off a field full of grain to eat". The instructions of the king were further that they should divide up the total number into three parties—one to explore, one to work for the colonists and another to guard—and this was given as a reason for the community of goods. The children thought that this arbitrary division would also cause trouble. They were also surprised that there were no women in the colony and asked especially "who was going to do the washing?". The subject was taken up in this way so that they might seem to prophesy the three years of hardship. I told them of the council of seven who were to elect the president and
of John Smith's imprisonment on shipboard, his demand for a jury and release at Jamestown.

We took up the situation of the colony and the low ground on which they settled in spite of the instructions of the king and company to seek high ground.

In physiology we noted on the relief map the Appalachian Mts. The children picked it out first as one long ridge near the coast and then were given the name, and after they had gotten together all they knew about mountains, how they were formed, they were told that these were folded mountains, or that they were one big wrinkle. The children have the idea that the eruption of the volcanoes and the escape of gases which made the crusts sink was one process and the wrinkling of the crust another, or that there was a difference in time between the two; so that I had to give them the idea of the two occurring simultaneously. I did not think at the time how this might have been done, but I think that this can be easily demonstrated at another time.

We took up the strata of the rock and by drawings I showed that the uplifted mountain region retained its strata, though some were distorted and broken. They discussed how even the hard rocks of the mountain could be worn down by the continued rainfall dissolving from the rocks some of its soluble materials and then the whole crumbling and being carried away. Most of the children said they would recognize limestone, granite and flint. They decided that they could find the different strata of the mountains in the same places where the rivers had worn gulleys or valleys through.

In number work they have spent a half hour continuing the working out of the quantity of water they would need in using 1/4
cup of cracked wheat if each 1/4 cup required 6 times its amount of water. The problem was to set the amount of water for any number of persons up to 10.

Miss Runyon.

Science:

They have passed on from the consideration of the general causes for wind and water currents to the demonstration of the fact that the force of gravity gave weight also to the air. They are going to demonstrate this pressure of air by the effect of suction on the palm of the hand of an elastic piece of rubber and by making a pump. Albert wished to use the force of the water to produce his vacuum in the way he had seen it used at the dentist's. With the help of questions he succeeded in diagramming the way in which the water flowing past the side pipe carried away a little air each time causing a partial vacuum.

Miss Camp.

Science: They decided that the alloy which they made with tin and lead and bismuth much more nearly resembles pewter which they had to begin with. Its melting point is low and its malleability is greater than that of the alloy which they had before made of lead and zinc, and yet it seems a little more brittle. So they have suggested that there was too much bismuth in it, as this is a brittle metal and they used equal quantities of bismuth, tin and lead. They have decided that it needs a larger proportion of tin than other metals. After this conclusion they were told that the composition of pewter is not absolute, that different proportions of metals are used by different makers, some using only tin and lead and some copper and antimony as well but that a preponderance of tin is necessary. They wrote a record of their experiments.

Miss Andrews.

Sewing: They continued the work already reported.

Miss Tough.
Textiles: They worked on their looms. Miss Harmer.

Cooking: Same as Va.

Shop: Some of the children are still working on the towel racks. These require considerable fitting and some laborious work on their part and more skill than most of their previous work, so that the work has been slow. Other members of the class are working on the emigrant wagon. The wheels were first cut out of a solid block of wood. Then they drew a small circle for the hub and from that made the spokes which are being cut out. We also built up another circle to represent the length of the hub. Other members of the class are working on the body—one on the sides and one on the axles.

Mr. Pall.
German: They are having four half hours a week in German. We reviewed the words they had already had and took up a few verbs such as kommen, geben, nehmen, auswischen, schreiben, etc. I have given them directions to do certain things, using these words, such as sending a child to the board to erase and to write a word given him in German and then I have asked another child if it were correct and if it were not to go to the board and take the place of the first child and correct his work, taking up the polite forms of address, etc. In this way they have incidentally learned the spelling of the words they have already used. Miss Schisby.

Science (a):

They have continued their work with wheat flour as reported last week. Several of the children have failed in their experiment of filtering the water and flour, some spilling it and other things happening to prevent its success, so that the work had to be repeated. Then the water and flour were heated and they observed the thickening appearance, they compared it with the white of egg and got the idea of albumen. Then the albumen was filtered off and poured back into the beaker and heated and filtered again three times in order to get all the albumen out ready to weigh. Their object in this experiment is to find the proportion of soluble albumen in wheat flour.

Miss Hill.

Science (b):

They have been performing experiments with the lever. They had a stick of wood which they fastened at one end to a clamped stand and then took different weights successively and placed them on the end of the stick and saw what pull or weight was necessary to show the spring balance fastened at the middle of the stick. Then they
placed a spring balance at the end of the stick and a weight at the
center, thus getting the idea of a different kind of lever.

In this experiment they measured the stick in feet and most of
them used gram weights and in connection with this we have been
working out the metric system, turning the feet and inches into deci-
meters, using 2 1/2 centimeters to an inch and finding the number
in any number of feet. The children were not able to write the deci-
mal forms and did not seem to be able to make the step from U.S.
measure to meters, so that some time had to be spent on that.

Miss Hill.

Cooking: (a) Same as VI. 2.

Cooking: (b):

Meat (continued). Methods of Cooking.

Experiments were made with small pieces of beef to discover the
results of cooking, or soaking, in various ways.

a. Meat soaked in cold water.  b. Meat covered with boiling water
and cooked at low temperature.  c. Meat covered with cold water
and heated gradually.  d. Meat covered with boiling water and
boiled rapidly.

In each case the appearance and flavor of both meat and broth were
noted and the results written by the child for the benefit of all the
class. Beef tea was to be made for luncheon and from these experi-
ments the best method was found to be the soaking in cold water
and gradual heating to extract the juices. Beef tea and cocoa
were made and boiled potatoes with white sauce prepared.

Number Work: If it takes 1/3 cup milk to make white sauce for 1
person, how much will it take for 7? 

Miss Tough.
Sewing: (a)

Continuation of work reported. D, Miss Tough.

(b): One of the children sewed aprons on the machine.
The rest continued their work. QK, Miss Tough.

Shop (a):

They have been at work upon protractors to use in their number work. They made 4 1/2 inch semi-circles and sawed them diagonally to get 45°. Two or three of the children have completed these and are making angles of 30° and 60°. All this work requires accurate measurements and in many cases the use of fractions of inches. In some cases they have divided 1/2 of a degree by bisecting $45^\circ \div \frac{1}{2}$.

Mr. Fall.

(b):

One of the children is at work on the potter's wheel. They first attempted to make the balance wheel with lead on the outside but found that it did not give an even weight, so they have bored 16 holes of a certain size and depth equally distant from each other and from the rim of the wheel into which lead is to be poured. These holes had to have little side grooves in order to hold the lead, so that the work has been somewhat difficult. The children have asked a good many questions about the melted lead and the impurities or dross that formed on the top of it in melting.

Mr. Fall.
Latin:

I have begun grammar work with these children and taken up the noun, adjective, pronoun, verb and adverb. I have tried to show them how the order in English fixes the place of a word in the sentence, while in Latin the ending is necessary. I tried to show them how the English language uses different endings the same as the Latin and the remnants that remain in the possessive case in the singular and in the change in the plural forms and in the change in the pronouns. We have taken up a couple of Aesop's fables for practice work.

Miss Schibaby.

Science:

In working out the principle of the lever involved in the movements of the forearm the children have had a review of the metric system in relation to the system of weights and the system of measures. I found it worth while to have them stop and work this out by making measures of soft tin, also by weighing the measured water. In going from the English system of linear measure to the metric, I asked them to show me the different lengths in an inch, 3 inches, 4 inches, 1 foot, 1 yard, by measuring it off in the air. The children who had been in the school some time were very correct in their ideas of this distance. The rest were quite inaccurate. They are very much interested in the metric system as a rational method in contradistinction to the arbitrary measure of the English system. The importance of this in being able to emphasize volume of cubic contents in terms of weight of the standard water seemed to impress them very much.

Miss Camp.

Cooking: Same as VIIb.
Two children once a week are taking regular turns in doing some modeling and carving under Miss Bolli's direction. Their regular work is making microscope stands. Some of them are at work upon special pieces, such as book racks for a table at home. The chief difficulty in the stand for the microscope is cutting across the grain on an angle of 45°. This is bringing in a good deal of technical skill.

Mr. Pall.

Textile Work:

regan experimenting in making felt. Will be reported when completed.

Miss Harmer.
History:

We have begun this week the history of the Plymouth colony. In order to connect the work with the preceding study of Virginia we went back to the founding of the London and Plymouth companies and then took up briefly Gosnold’s attempt at colonization and John Smith’s exploration of the New England coast. We then discussed the religious and political conditions in England to make clear the reasons for emigration to Holland. The children showed little sympathy with the Pilgrims at this crisis, a number of them insisting that they would not in the least object to going to a new country to live, and one child thinking that the Puritans ought to have been satisfied with the change from the Catholic to the Episcopal Church and to have been willing to conform. Others, however, thought that the Separatists were right in wishing to be entirely independent in their church government. Miss Hoblett.

Latin:

We have now taken up all of the cases, the ablative being, the last which we have used and they have had drill upon it analyzing stories they are familiar with to find its use in the sentences.

We have been working also on the Argonautic Expedition.

De Argonautis.


Paucis annis postea, oraculum volui consulere rex. Amicum Delphos misit. Oraculum respondit: "Non est in praesentia periculum, sed cave, o rex, hominem quem unum calceum habens verisist."

I had typewritten a part of the story which they had studied. I had them put all the new words in their dictionary and told them to read it over and work it out as a preparation for next day. I wanted to see what difference it would make if they saw the words written rather than always heard them. I had found with group X that often words that they knew perfectly well by hearing they did not recognize when they came to see them in print and it was to this fact that I had laid a good deal of the difficulty in reading Caesar.

Miss Schibsby.

Number Work:

The work with the class not proving successful the work given out this week has been either individual or to groups of children about equal in ability. The point aimed at with all of them was facility in translating readily from the decimal notation to fractions or from the fraction to the decimal notation, since this was required in their experimental work. They were also given as it was found necessary addition, multiplication and division of decimals, always beginning with a whole number and as multiplier or divisor and then proceeding to divide or multiply by 10 or 100 as the case might be to make the operation exactly like that of whole numbers.

Miss Camp.

Science:

This week we have continued our work on the things in the air. Part of the class prepared some more carbon dioxide, part prepared oxygen and one made lime water.

We saw that a lighted match goes out in carbon dioxide, that carbon dioxide is heavier than air, for it can be poured from one beaker into another (this we knew because a lighted match went out
when put into the second beaker), and that carbon dioxide turns lime-water milky. We had seen last week that water through which carbon dioxide had passed turned lime water milky and blue litmus purple, and this week we found that breathing through lime water or through litmus water has the same effect as passing carbon dioxide through.

We found that if we put an almost extinguished match into oxygen it would blaze up brilliantly and that we could shake the flame off and have the match thus relight itself in a beaker of oxygen several times.

We have also breathed into a dry beaker for a couple of minutes and have found that we can collect on the beaker enough water to put out a match rolled along the inside of the beaker.

Besides the above we tried to explain the great variation in the results of the determination of the amount of oxygen in the air and I told them of the "extincteur"—an apparatus for putting out small fires by means of carbon dioxide—and of the Grotto del Cane, where a dog cannot stay long unaffected by the carbon dioxide while a man can because his head is in the purer air above the carbon dioxide.

Arthur Taber Jones.

Sewing:

They have continued work on sewing curtains, some of the children using the machine. They have set up their looms.

Mrs. Foiling

Shop Work:

They have been making some bobbin stands for the textile work. The girls have been making some furniture for doll's houses, as this brings in some elements of instruction that they have never had.
Group IX. January 26, 1900.

They have been making a table with two leaves on hinges and the placing of the hinges and the bar for the support of the leaves when open requires new skill. They are also making a rail underneath the table top and are putting in their completed work. They have taken this up chiefly as supplementary work.

Mr. Fall.
Latin:

They have been making out charts of verbs in the subjunctive
mode and have continued their translating of Caesar with the usual
drill on analysis of sentences and construction. They have had in
addition as variety a few stories to translate at hearing.

Miss Schibsey.

Science:

We finished our work last week by seeing Newton's rings and
this week I spoke of several other cases of interference, first,
in sound, and then in light. We talked some about the interference
that we observe on turning a tuning fork around close to the ear,
of the interference of two vibrating strings nearly in unison and of
the interference in a rope giving stationary waves. The tuning fork
we of course had and could hear the difference according to the
way it was held and the stationary waves I illustrated with several
feet of rubber tubing. I then told how by means of stationary
waves in air we could measure the length of waves started by a
tuning fork and asked whether we could use the same method in
getting the length of light waves. The class thought at first we
could, but soon saw that it would be impracticable.

After we had thus looked at several simple cases of interfer-
ence, we went back to Newton's rings, and I gave Newton's explanation
of the phenomenon and the explanation which we give today or our
wave theory, without, however, trying to show why a half-wave length
is lost at reflection from a denser medium. I then told of Young's
discovery of interference and showed how, by such an arrangement
as he used, we could measure the length of light waves.

I then gave the various modifications of Young's apparatus as
Prof. Michelson gives them, leading up to the interferometer, trying in each case to have the class suggest the modification which should be made. If I were to repeat the work I should omit these intermediate forms and go at once to the interferometer, for these modifications seemed as hard for the group and of as little interest as anything we have taken up. One difficulty was in seeing the advantage of a plane parallel over a simple slit.

I showed last how the interferometer might be used to measure wave-lengths.

Arthur Taber Jones.

"Ewing: They have continued their work already reported.

A: Miss Tough.

Sanitation:

The most important point to be considered in the selection of a building lot was taken up. This was the condition of the ground itself, or the soil. This was given by several of the children. They gave clay, sand and loam and knew the general character of each. When asked how soil was formed they gave rock and decaying vegetable matter the cause of the formation of soil from rock. They gave wind and rain and small animals (they probably meant polyps building up the coral reef) the bacterial action in decaying vegetation and ground worms. Each child was given a special topic to report on to the class in the next lesson.

1. A general account of the formation of soil.
2. Action of rain in the formation of soil.
3. Action of frost on soil.
5. Action of running water.
6. Kinds of soil and kinds of rock from which it is disintegrated.

This included a careful study of soils with reference to the formation and position and their general characteristics.

7. Loam and alluvial soil.

8. Limestone.


10. Sand. Samples of the different kinds of soil were to be collected by each child, put in an envelope and labeled with a common name and the place where found. Much time was lost in the children finding the references to the geology to which they were referred. In the next study, hour a slip with the page references was given each child to use. A further difficulty was found in having four reference books in a class of thirteen. The children while waiting for books made covers for their written records. The outline I have been using for them is as follows:

1. The idea of the earth as a whole—
   - Crust
   - Configuration
   - Rocks—igneous, metamorphic
   - Agencies acting on rocks—heat and frost, glaciers, water and rain, vegetation, animals, winds

2. Soils—kinds, composition, character.

The following order was given them for their house plans:

A 6-inch square to determine (1) locality, (2) situation, (3) aspect, (4) climate, (5) character of prevailing winds. They were to give reasons for the situation, aspect and use of rooms.

Miss Harmer.
Shop:

They are still at work on their screen for the dining-room making the frame. They have also made a couple of caddles for the loom. From time to time they have worked on supplementary work which appeals to their special individual interest.

Mr. Hall.
February 3, 1900.

We cooked prunes and then flaked rice and moulded it and served it with the prunes. On another day we cooked apples. This included the paring and coring of them.

The children have continued the work on their playhouses. So few of the children have been present on account of the cold that the work has been delayed. Each child as he appears goes on where he left off with his individual work.

The older children are making a frame work to fit the floors of their playhouses and are weaving a rug upon it. This is to be made of candle wicking.

The smaller children made bureaus and sofas for their houses.

Miss Scates.
Social Occupations (a & b):

In their hour together they played number games. Then they were given special drill in 1/2's, 1/4's and 1/8's and I think that a understands them but am somewhat doubtful about b.

They spent one day in talking about the products of the silkworm and how silk is obtained, in order that they might have this important fibre with their cotton and wool.

Group a have been working on their freight cars and group b who had finished theirs have been making buckets out of cardboards. These are in connection with the making of sugar which they have just begun. They experimented with sugar and found that it was soluble in water, but if in the bottom of the cup did not dissolve so easily. They decision that this was because the water could not get around the sugar. When talking about what part of the cane furnished the sugar, the children by examining the juice of some of their plants decided that it came from the sap, and that by squeezing the sugar-cane, it could be gotten out. As they found that the sap was too thick and the sugar has hardened in the cane, some of them suggested that it could be got at by putting in water. After a little discussion they decided that the sugar cane must be cut up so that the water would touch all parts of it.

I read them a story and they have been reproducing it to the other children who were absent. They need practice in this, as they are not able to formulate their thoughts into language well.

OK.

Miss Andrews.

Hand Work (b):

They are making freight cars out of cardboard. I tried
to get them to suggest a way to make these, but their ideas were not forthcoming, so I have been giving the work by direction. They use the ruler in the work but very poorly. They are awkward with their hands. The work is slow necessarily because each one needs a great deal of attention. They will do just what you tell them but they cannot go on and work a side out having made one just before. They need help with every step.

Miss Lackerstein.

Cooking (a):

This group have made cocoa for twelve persons taking as a basis the proportion used for one person. The children work out the proportion for twelve. One child prepared this, while the others cooked cornmeal. The proportions used were 5/4 cup water, 1/4 cup cornmeal, 2 spoonfuls of salt.

Mrs. Feuling.

Shop Work (a):

Have continued working on their carts.

(b)

Are making small four-wheel wagons.

Miss Jones.

Sewing:

Both groups have continued work reported.

Mrs. Feuling.
History (a):

All the time this week has been spent in working on their smelting-places. The work is much the same as that done last year except that they have got the idea of the advantage of charcoal as a fuel by contrasting a fire made of charcoal with a fire made of the best wood that they had. Seeing the great heat of the charcoal and the small flame and no smoke in contrast with the large flame and smoke and quick decomposition of the fine wood fire brought out this idea. The problem this week has been the construction of a kiln to make charcoal of their wood. The one conclusion that was drawn is that they must regulate the amount of air both in the draft and in the hole at the top. About half the class do not seem to be able to draw them the most obvious conclusions. One child thought the reason the fire did not burn when the holes were all closed up was because there were a few cracks still unclosed; but by having her repeat the building of a fire with plenty of air admitted below and above, she withdrew her conclusion, but continued to say it was because the smoke could not get out, not because the air could not get in, that the fire went out. Then to prove that the air could not get in if the smoke could not get out, they tried blowing into glass tubes stopped and unstopped, and then applied this to the charcoal kiln with the result that they all now have the idea of regulating the supply of air at both top and bottom.

Miss Camp.

History (b):

The children looked over a number of pictures selecting the ones they considered illustrative of anything in the lives of the
people they are talking about. I read to them from "Seven Little Sisters", describing the way the Arabs moved from place to place. We spent three periods in number work adding numbers by 5's and 10's. One period we spent in writing. The children wrote down the names of the things that they had been talking about. Where they needed help I wrote the word on the board.

Miss Hill.

Reading (a):

I have used blackboard work every day but one, when I borrowed b's reading books. They did very well with them. Jessie and Paul are not up with the class, although they do well. I have written questions on the board for them to answer and told them to do things, such as, "Run around the table," "Please bring me a book," using the first part of the sentence for each child and changing the last word or two.

Miss Lackerstein.

Sewing (a):

They are continuing their work last reported.

(b)

Are beginning to knit washcloths.

Mrs. Feuling.

Cooking (a):

This group reviewed the different preparations of corn and had a lesson on setting tables, as the kitchen was too cold to work in.

Mrs. Feuling.
Cooking (b):

Worked out the proportion of water and cornmeal for making mush. They knew that flaked corn absorbed an equal amount of water in cooking, so we took flaked corn as the unit. The children folded two similar sheets of paper and placed them on the scale. They decided to use one cup of corn meal and found out how many cups of flaked corn was necessary to balance. The cornmeal flaked was placed on one paper, and the children used the same cup to measure the flaked corn. They found that five cups of the flaked corn balance one cup of cornmeal and decided that the cornmeal absorbed five times as much water as the flaked corn. They decided on the proportions to use in cooking: corn: 5/4 cup water, 1/4 cup cornmeal, 2 spoonfuls of salt.

The kitchen was too cold for the practical work, so the children set the tables for the other groups. We cooked enough for both.

Mrs. Feuling.

Shop (a):

Worked on brush houses.

(b):

Cut poles for a larger home and made the foundation for it 4 x 5 feet.

Miss Jones.
History (a):

Most of this week has been spent on the geographical side. The work of last week has been carried on in the construction of angles and general globe geography. One half hour we spent in working at the trade winds.

Miss Hill.

History (b):

The children were told that as soon as the Portuguese began to succeed so well in acquiring new lands and trade through their explorations, Spain sent out expeditions and colonies and soon there came to be danger of war between the two. They were asked how it might be avoided and suggested referring the matter to a third king. They were told that it was referred to the Pope and that he drew a line north and south giving west of the Canaries to Spain and east to Portugal.

They were told of the death of Prince Henry and of the carrying on of his work by the king of Portugal in whose reign the Cape of Good Hope was rounded. They were told that the explorer named the cape "Stormy Cape" because of his difficulty in getting around it, and that the king then changed it to its present name because of the hope that it was the route to India.

I next asked them about the interior of Africa--how that was discovered. They looked on the map and found the two principal rivers, the Nile and the Congo, and found how far in they went. I asked them why the people did not sail up the rivers, and after suggesting many difficulties, they suggested the chief one of falls. They were told of the civilization of Egypt, because I wanted them to connect it with Africa and to get some notion of why explorations did not begin from that point. Then
I told them a little about Livingston's and Stanley's explorations. I told them that there was a war now going on between England and the people in the lower part of Africa, and one of the children was able to tell me it was the Boers.

I told them that while the Portugese were exploring further and further south there was a man who thought that if land extended so far in that direction, there might not be any water that way. He tried to find a new route to India. This man they told me was Columbus. They all thought that he was a Spaniard and were surprised to find that he was a native of Italy, which we found on the map. I then told them something of his early life.

For their reading lessons I secured copies of Robinson Crusoe. They begged after the first page or two to take it home. I suggested that they leave the book until they were ready to go at noon, but they assured me that it would be much better if they placed it in their blouses. So each child went off with a book in his bosom. I saw them later in the morning, surreptitiously reading in the other classes, reading as they stood in the hall waiting for the bell and reading as they walked through the hall. One of the children had read the book through at Christmas time, so that another book was given him. Two others in the class have completely finished it and a third is about half through. Thomas and William with help have read only one or two pages.

As no number time is assigned to these children, I have begun taking one period of the history time for a little number-work. This time we tried to count the number of grains of corn
in a half pint cup, two children working together and counting by 3's, one couple counted the whole number. One or two others were not able to get past 24 or 27 and they showed some difficulty in being able to count readily. When this was apparent, I divided the grains of corn into 3's and then put them together in squares so that they could see that they had 12 and then another 12. This seemed to be easier for them than to count straight ahead by 3's.

Miss Runyon.

Science (a):

Have continued working with their compasses and have how found that by moving the needle or piece of steel wire over the magnet they could vary the pole at will, making either the head or the point point toward the north. They have now hung their needles on silk floss and found that it takes the north and south direction. They have also noticed the declination. The reason for this I have not yet worked out.

Miss Camp.

Science (b):

They have brought together what they know of the formation of the earth. This week they have worked out what soil is. They named the things that they would find in the tracing it back to its source in the rocks, giving their ideas of the way in which it was formed. They mentioned sandstone first as an ingredient of soil. It took a good deal of questioning to get them to formulate what the black earth or loam was as plant mould. I tried to get them to give me an idea of organic matter as what was left of plants and animals after life was extinct, but they have not yet given me anything about animals forming
part of the soil. The first time in June, over this one of
the children told me that there would be "lime" in the soil from
the breaking up of the limestone. On making a list the second
day no child suggested lime or any other part of a rock as being
dissolved in water in the soil. I showed them all sorts of
shells and corals and limestone with shells in it, but as yet
they have not drawn the conclusion as to how these shells were
made or even taken the step that the rock full of shells was made
from shells similar to those they have been observing.

Miss Camp.

Science (b):

In connection with the glue which they are to make at home
they soaked some leather in caustic soda to get the tannin out,
before proceeding to make the glue.

They have taken up the subject of gravitation and have
formulated the first principle that there was a pull toward the
center of the earth, and that this is the weight of bodies. They
were told that at different parts of the earth this pulling is
greater; for example, it is greater at the poles than at the
equator, and that it becomes less as the distance from the center
increases and greater as it decreases. As the children could not
perform the experiments to show this, they were told of the ex-
periments other men had made, by which this principle was dis-
covered.

As the subject of weight was brought up, they asked about
our system of weights and were asked what would happen if all
our weights were lost. After a long discussion they discovered
that our system of weights is arbitrary and that the standard
weights are kept in the treasury at Washington. In comparing the French methods of weights, they were told what the basis was and have made preparations in getting apparatus ready to make a system of weights on this principle.

Miss Andrews.

Cooking (a):

Milk--Composition (continued).

The curds which had been separated from the whey by use of cheese-cloth bags last week was examined and found to be a firm dry substance. The resemblance to albumen was spoken of by one of the children and the class was told that it was similar to albumen but was thickened by acid instead of heat as they had found. It was given the name casein.

The children were then asked to write what they had found out about milk since they had been working with it. This seemed so difficult for most of them that we talked it over before the writing was begun. After a brief review the subject seemed clearer and with considerable assistance short sentences were written describing what had been worked out.

The curds were made into cottage cheese by the addition of salt, butter and cream. Potatoes with white sauce were prepared and cocoa made.

Number work: If it takes 1/3 cup of milk to make white sauce for one, how much will it take for 6?

If it takes 3/4 cup of milk to make cocoa for one, how much will it take for 6?

Miss Tough.
Shop Work (a):

They have completed a large dug-out and have drawn patterns for a sailboat. They began their work on a game. Game is hollowing out of spaces on a board in which marbles can be used for number work.

(b):

Worked on reels and drew a diagram for a sailboat. They have begun the boat, which is to be 20 inches long.

Miss Jones.
History:

They have had as their history work the first year in Jamestown. The children have been so irregular in attendance that much of the work has had to be repeated. I asked them to learn two dates, 1492 and 1607. The next time I called for them most of the children had forgotten them. So I had them write them on the board and state what each was. I asked them what was the good of learning a date and "George said that"if he ever had a little boy and he should ask him when America was discovered he would like to be able to tell him". I tried to arouse some interest in knowing how long ago it happened and how long after America was discovered the first English colony was formed, but I fear with not much success. The facts for the history of the first year at the colony have been taken up in much the same way as last year, but many of the details have been omitted. The chief points brought out were the fact that the colonists attempted to plant English wheat and that in the rich soil of Virginia it became chiefly stalk, so that they did not have a harvest, the illness that resulted from the location of the place, the inadequate protection from the Indians and the disputes within the colony itself.

Miss Runyon.

Physiography:

Our discussion is concentrated about the beginning of rivers in the mountain region in Virginia. They gave me the different names for streams of water, such as creek, brook, stream, river, etc. and told the difference. They then told me that all these started by water collecting in some cavity in
the rocks and then coming out in springs. Albert drew a diagram on the board to show this but had his spring coming from the surface and was corrected by another child who placed the spring lower down, so that there would be some pressure. The children seemed to have the idea at first that the water was pressed out by the rocks and it was only by inquiring into the nature of all things to seek the center of the earth that they saw the reason why water seeks a lower level. They also had an idea that the rocks were worn down by the beating of the rain upon them. By getting them to think of a mountain of sugar or salt, they suggested the solubility of parts of the rock but at a slower rate, and they were told that weathering or rotting of rock was chiefly this. They also had the idea that mountains were "thrown up" but they were a sudden event like an earthquake and were much surprised at being told that land is being raised and cut down now and that the process is a slow one.

Number Work:

The children have secured notebooks in which to keep their records of the cereals and proportion of water to each. The first day that they used these I told them to find out the number of columns they would need and arrange the page. I purposely did not tell them to measure and page and have the columns equal, but had rulers there for them to use. I wanted to see how they would go to work at it. One of the children only took the ruler and measured the width of his page and attempted to make an equal division. One of the children decided not to mark his columns down but simply to keep them under each other, and he was allowed to do so. Another drew his columns freehand with much
blotting from the ink. When his attention was called to the fact that it would be neater to have the columns equal, he said he could not possibly do it; and then I took a piece of paper and asked him if he wanted two columns how he would arrange it and he suggested folding it in half and for four columns in half again. As the paper had been measured just the width of his page this served as an easy way of getting it right; but I then asked him to take the ruler and measure it to find out how many inches wide each column was. They have taken a good deal of pride in their notebooks, but I think it will be necessary to give much more time than a half hour a week to accomplish much in it.

Miss Runyon.

Science:

After experimenting to find out what pewter is made of and having made a similar alloy, I told them the exact proportions that were used in colonial times, i.e. 79% of tin, 7% of antimony, 2% of copper, 2% of bismuth, 8% of lead. They worked out how many grams of each metal would be required to make 200 grams of pewter and then wrote a record of pewter.

Miss Andrews.

Cooking:

Same as Vb.
We have discussed the products that the different colonies first exchanged among themselves and those which they sent to different parts of Europe and Asia. We have also taken up the products that would be imported. This was in preparation for the Navigation Laws, which are to be taken up next week. The children had such indefinite ideas about products that we went quite minutely into the life of the men concerned in raising these products and preparing them for a market, to see if their interest could not be strengthened.

Miss Bacon.

They have begun to work on the Dutch explorers. They are first going to discuss how the Dutch gained control of the East Indies. At this time Spain was the great sea power, and as soon as she had settled her troubles with the Moors, she was called upon by the Pope to assist him in putting down Protestantism. I told the children a little of what Martin Luther tried to do in giving education to all and taking the stand he did against the Roman hierarchy, and told them how this Protestantism took such a deep hold on the Dutch people and how Spain, after sending out from her own country a million of her best artisans because of their faith, turned to Holland to destroy the Protestant religion there. They were told also of England's coming forward to champion the Dutch cause and of the preparation of the Spanish to meet her on the sea by building the great Spanish Armada.
Having been worked up to this point they were told to read for themselves at home the story of the battle and its outcome. They were told that after Spain's power on the sea was destroyed, she turned her attention to her army, especially that she seized Portugal, but not having sufficient navy gave very little attention to the Portuguese colonies. The Dutch were the distributors of the eastern products brought by the Portuguese to their country. They were now cut off from their trade because of the destruction of Portuguese commerce, so the Dutch had no other way than to extend their route from Portugal to the East Indies. In this way in a few years they had control of the commerce of the eastern countries and had taken or built up colonies in the southern part of Asia and through the islands of the southwestern Pacific.

Miss Bacon.

German (b).

I have given them a few new words: der Bleistift, Kreide- stift, Federwasser, Topf and Papier. Most of the time has been spent in trying to make the children realize that there is a phonetic system both for vowels and consonants. This necessi- tates taking up the definitions of vowels and consonants and getting them to see the difference.

Miss Schibsky.

Science (a)

Two of the boys finished their experiment to find out how much soluble albumen there is in flour. They weighed 20 grams of flour, washed and filtered it several times, heated the filtrate until the albumen coagulated, filtered again and weighed
the albumen. Their result was a good deal below what it should have been, probably owing to the number of hardlings their materials had to undergo. The class as a whole have improved very much in the way in which they manage apparatus and this should tell in the results of their next experiment.

Miss Hill.

Textile work (a)

They looked at samples of various sorts of fibre, such as hemp, jute, sisal, ramie, and put to soak some of the stalks of the flax which was raised in the school garden last year.

Miss Hill.

Science (b).

They spent nearly all their time on number work. They have been changing measures of the English system into the metric system. Having done this they finished their experiment with the lever, finding that what was apparently lost in power was really went into some advantage elsewhere.

Miss Hill.

Textile (b)

They spent their time in watching a German woman who visited the school spin flax on the spinning wheel.

Miss Hill.

Number work (a & b)

I have them once a week separately. We have been practising decimals, merely writing them and comparing them with fractions.

Miss Lacherstein.

Voice work.

We have continued the reading of "Alice in Wonderland" and there is a great improvement in their concentration and connecting of the words. They are working very interestingly on the technique.

Futlin.