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## **Bulletin of the Washington State Normal School Ellensburg, Washington. Activity Units in the Elementary School**

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ACTIVITY  
UNITS  
in the  
ELEMENTARY SCHOOL



Washington State Normal School  
Ellensburg, Washington

# BULLETIN

of the

Washington State Normal School

Ellensburg, Washington

# ACTIVITY UNITS

in the

# ELEMENTARY SCHOOL

This Institution is a Member of the American Association  
of Teachers Colleges

Price, Fifty Cents per Copy

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Frances Caroline White.....Fourth Grade  
Tennie Johanson.....Fifth Grade  
Lillian Bloomer.....Sixth Grade

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## FOREWARD

Among the problems confronting a supervisor or a director of training is one of finding concrete illustrative material to be used in instructing teachers. Student teachers especially seem to profit by perusing a teaching unit and by getting a complete view of a unit of instruction as a guiding pattern. Because of a need for such materials by teachers in service, supervisors, and teachers in training this bulletin was compiled. A unit of work in each of several grades is described, accompanied by reference materials which were found to be useful.

A teacher will find here valuable suggestions for carrying on activities through a unit plan of instruction. How to initiate units of work, motivate activity, guide pupils, select materials, develop purposes, and evaluate results are illustrated. The emphasis is on the guiding of pupils in activities which lead to desirable results in the form of wide experiences, broad understandings, lively interests, social competency, wholesome attitudes, self-reliance, and mastery of the tools of learning.

ROBERT E. McCONNELL,  
President.

## INTRODUCTION

The many inquiries from teachers and students of education regarding sources of material and methods used in activity procedures prompted the publication of some of the units of work which have been done in the demonstration school of the Ellensburg State Normal School. Each teacher in the elementary school has contributed one of numerous activities included in a year of work under her direction. She has reported what she feels best meets the fundamental criteria of purposeful activities.

Before undertaking a unit and frequently during its development the following standards have been kept in mind: Is the entire undertaking in its various phases related to the needs, capacities, and interests of each child in the group? Is it of real worth? Will it provide contacts with the home and community? Is it developing desirable attitudes, individually and socially, and leading to growth in personal and group responsibility, cooperative living, initiative, leadership, and creative self-expression? Does it develop important study habits and help in the learning of important facts? Does it include materials from various fields of subject matter which are naturally related to the pupils' interests? Are children growing in ability to recognize problems, plan, carry out and evaluate individual and group enterprises? Are children developing in ability to do careful thinking, to form conclusions and generalizations only after all facts are known?

Owing to differences in content of the various units and methods of procedure included in each type of activity, the forms of the descriptive reports vary. In each case the teacher has tried to give a vivid picture of the activity and reveal some of the enthusiasm and enjoyment which children get in doing things that are worthwhile and meaningful to them. Important items of subject matter, as well as social learnings, are usually interwoven in the descriptions of procedure because method and subject matter cannot be separated. The outlines of subject matter and outcomes of each unit which follow the descriptions of procedure are given to indicate clearly the great variety of learnings which are inter-related in each interest unit.

The Edison School in which the described activities were



carried on is an elementary school on the Normal School campus. It is used as a demonstration school and for directed teaching experience for Normal School students. Its organization includes a Nursery School, morning and afternoon Kindergarten groups, and grades one to six, inclusive. A supervising room-teacher teaches, gives demonstration lessons, and directs the student teaching in each room in co-operation with the departmental supervisor.

The enrollment in each classroom is quite typical of the enrollment in other public elementary schools.

#### **Enrollment for 1933-34**

Nursery School.....	16
Kindergarten, morning session.....	32
Afternoon session .....	30
First Grade.....	31
Second Grade.....	29
Third Grade.....	31
Fourth Grade.....	29
Fifth Grade .....	34
Sixth Grade .....	30

The children attending this school are not specially selected but come from the geographical section of the town adjacent to the school. There is, therefore, the same variation in mental ability, physical condition, and social background as is found in any typical public school of the state. The Stanford revision of the Binet tests of mental ability have been given to all except a few children. The following table gives data regarding range of mental ability in the different grade groups.

#### **Mental Ages and Intelligence Quotients, January 1, 1934**

	<b>Mental Ages</b>				
	Range	First Quartile	Median	Third Quartile	
	yr. mo.—yr. mo.	yr. mo.	yr. mo.	yr -mo.	
Grade I .....	5-6 — 9-1	6-5	7-10	8-6	
Grade II .....	4-4 — 9-3	7-5	8-0	8-7	
Grade III .....	6-11—11-6	8-5	9-0	10-0	
Grade IV ....	7-3 —12-0	9-5	10-5	10-11	
Grade V .....	8-8 —13-5	10-8	11-1	12-1	
Grade VI ....	10-5 —16-5	11-7	12-6	13-3	

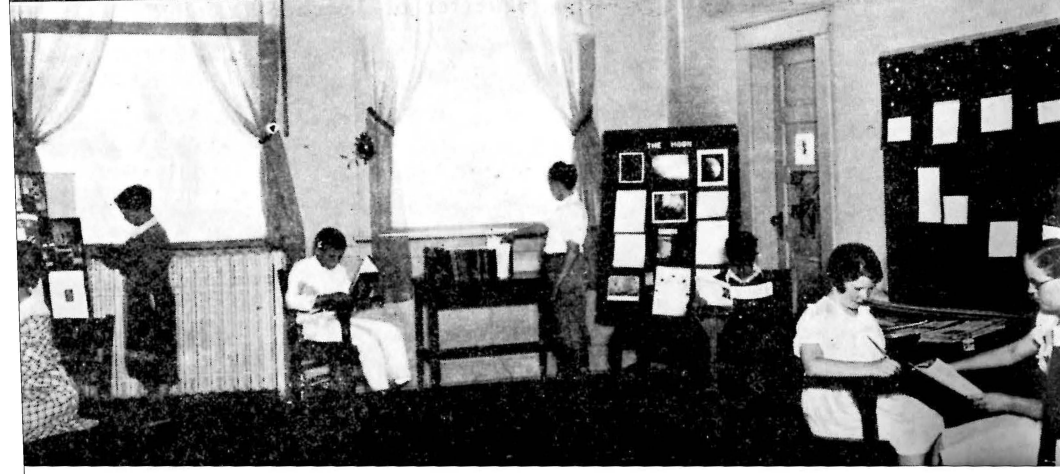
**Intelligence Quotients**

	Range	First Quartile	Median	Third Quartile
Grade I .....	71-143	92	113	128
Grade II .....	41-126	97	106	110
Grade III .....	80-130	90	103	110
Grade IV .....	74-129	89	110	117
Grade V .....	67-120	93	106	113
Grade VI .....	85-136	95	106	117

Experience with activity procedures proves that children of average intelligence are capable of going far in developing skill in searching for and securing definite information about a topic, ability in sharing information with others by means of clear and accurate reports, and a questioning attitude which is satisfied only by critical study and independent effort.

This growth will take place when the activity is guided by a teacher who is intelligent, well informed, and has broad interests as well as an understanding of and a liking for boys and girls. She must be courageous and energetic enough to be ready to follow vital interests. She must be ready at all times to assume leadership in directing learnings toward worthwhile ends. She must have the power of discrimination necessary to direct activity toward real values rather than to permit mental dawdling and waste of energy on non-essentials. If she has these abilities then she has the potentialities of a creative teacher and will be able to go far in helping children to learn and grow in desirable ways.

AMANDA HEBELER,  
Director of Teacher Training.



## KINDERGARTEN POSTOFFICE

Laura Minkler, Supervising Room Teacher

The kindergarten children had been invited to the first grade room. While there, they saw a large aquarium. When they returned to the kindergarten, they expressed a wish for an aquarium like the one they had seen. Mr. Grupe, who enjoys goldfish as a hobby, was consulted and he agreed to make an aquarium suited to their needs.

Some days later, the aquarium and a pail of gold fish were in the room when the children arrived. They were very enthusiastic and much impressed with the mirrored bottom which reflected their faces. After the aquarium was filled and the fish put in, the children were fascinated by the movements of the fish and their changing appearance caused by the reflections.

The filling of the aquarium was a joyous experience for the children. Incidentally, they counted the twelve pails of water and learned that the aquarium held eight gallons.

The next day, a new committee list appeared on the House-keeping Chart under the name "Gold Fish." Some of the children wanted to know what they would feed the gold fish. Various children told what they used, namely water cress, oatmeal, and prepared fish food. These types of food were shown to the children.

When the children learned that the aquarium cost eight dollars, they wondered how they could pay for it. Then the teacher recalled an enjoyable trip which had been taken earlier in the year when they deposited their bazaar funds in the bank. She explained that they could draw on this money. The children watched the teacher while she wrote a check for eight dollars. They also counted eight silver dollars. This gave them a better understanding of the amount involved.

The group did not know whether the gold fish were a gift or a loan, so they felt the need of inquiring about it. This led to a discussion of means of communicating with Mr. Grupe, if he could not be seen in person. A child's suggestion "Let's write a letter," appealed to the group, and this was the means decided upon. The children offered many suggestions as to

what should be written, and after much discussion of the suitability of the suggestions the following note was composed:

Edison School,  
Ellensburg, Washington,  
January 21, 1934.

Dear Mr. Grupe:

Thank you for making an aquarium for us. We are sending you a check for eight dollars to pay for it.

It was nice of you to lend us fish for our aquarium.

Your friends,

The Afternoon Kindergarten Children.

The children watched as the teacher wrote the note. Then the question arose as to the proper way of folding a letter. The children folded and sealed it. Their ideas were vague about the method of addressing the envelope, so letters which had been received through the mail were shown them.

After the letter had been addressed, a need was expressed for a stamp, so a discussion followed about stamp values and costs. A committee was then chosen and sent to the Third Grade Postoffice to purchase the stamp. With the stamp properly placed on the corner of the envelope, the whole group went to the street mail box to post the letter. George, our big boy, carried a chair so that little Benny, who was chosen to drop the letter, might reach the box. The attention of the children was drawn to the form and construction of the post box and they were told "What it said" on the Hours of Collection notice.

The following questions were an outgrowth of this trip:

1. Who takes the letters from the box?
2. Where are the letters taken?
3. How are they taken to other towns?
4. How does the postman get them?
5. How often is the mail collected?
6. Why are some boxes larger than others? (Collection and storage boxes.)
7. Who puts the marks on the stamps?
8. Why are there so many boxes in the postoffice?

9. Why does the clerk weigh the packages?
10. Why are there different windows? (Stamps, packages, money orders.)

Since the weather was too inclement to permit a group trip to the city postoffice, a trip was made to the Normal School Postoffice. Donald's father, a postal clerk, came to school and answered many of the children's questions. Many children were also taken, individually, to the city postoffice by parents who were much impressed with the amount of interest the children were showing.

Two days after the note had been mailed to Mr. Grupe the following reply was received:

Ellensburg, Washington,  
January 23, 1934.

Dear Afternoon Kindergarten Friends:

Thank you for your check. I enjoyed making the aquarium for you. You may keep the gold fish for your aquarium.

Your friend,  
Charles Grupe.

A second note was sent by the children in which they thanked Mr. Grupe for the gold fish. By this time, the children had a definite idea of a simple letter form and could dictate a clear note.

The postman in the district delighted the children by giving them a discarded carrier's cap. Again a letter of thanks was dictated and sent. The children asked why there were no numbers on their postman's cap. It was explained that the numbers could not be left on the cap except when being worn by someone in the service. The discovery of the ear flaps led to a discussion of the need of different types of caps for different seasons.

A mail pouch was loaned for a few days by a postman father. The right way of wearing the pouch was shown and ever after the children were very careful to wear it on one hip in true postman style. When this pouch was returned, the children made one of their own.

With such fascinating properties on hand, the children played postman whenever an opportunity presented itself. Often,

little postmen could be seen trudging around from playhouse to store, occasionally singing a postman's song as they went. This naturally led to the need for a postoffice building. After considerable planning, they decided to build a postoffice similar to the one seen at the Normal School.

A second trip was taken and plans were made. Blocks, boxes, boards, etc., were placed in the room as an incentive, and the children experimented with the construction. They finally made three tiers of postoffice boxes by laying narrow boards across rows of blocks, placed upright. The lowest tier rested directly on the floor.

When the children stepped back to view their construction, they laughed and laughed at their "funny" postoffice. They decided that it needed a foundation. After trying, unsuccessfully, to accomplish this with blocks, they decided to use wooden boxes for the foundation.

Their next problem was the making of the letter and package drops and the stamp window. They tried out various ways and finally made the former of blocks. The latter was made of the frame of a peach box and was placed in the front wall of the postoffice. "We must have numbers on our boxes," some children said. A committee printed numbers with the rubber stamp set. Other children then thumb-tacked the numbers to the boxes. Every child was assigned his own post box.

Every child had the joy of printing the words, "stamps," "letters," and "packages." One sign of each kind was contributed and used in the postoffice.

The need of a supply of stamps for the postoffice arose and a chart showing stamps of various values was borrowed from the third grade. It was decided to make those more commonly used one-cent, two-cent, and three-cent stamps. Pieces of paper were colored red, green, and purple. The use of the rule was introduced and the paper was marked off in one-inch squares. Then, after numbering, the stamps were cut apart. They were sorted as to kind and placed in boxes which the children had painted and designed for that purpose. Cancelled stamps, envelopes, and money order blanks were brought from home and added to the postoffice supplies.

The children did not like the effect of the boxes of various

sizes and shapes in the foundation of their postoffice, so they covered the foundation with wrapping paper. The paper looked so bare, that someone said, "Let's put a design on it." Many designs were made and Shirley's rectangular design was chosen. All the children helped Shirley paint her design on the paper.

While the postoffice was being completed, George and Margaret Ann worked faithfully on a street postoffice box. It was made from a corrugated paper carton. This box was fastened to a standard made of a tall cylindrical block nailed to the end piece of a banana crate. A house mailbox was made and fastened outside the children's play house. This was much used when delivering mail to the play house.

The name on the grocery store, built by the morning kindergarten children, suggested that the postoffice ought to have a name too. Various names such as Ellensburg Postoffice, Our Postoffice, etc. were proposed. Finally the name Kindergarten Postoffice was chosen. Each child had a share in painting the design. The children took much pride in the appearance of their sign "Kindergarten Postoffice," for it seemed to add much to the dignity and importance of the building. "Now it looks like a real postoffice," they said.

By this time, St. Valentine's Day was approaching and the children were making valentines. When the valentines were finished, the children made envelopes and stamped them. A child suggested that it would be fun to go to the postoffice for their valentines, so the valentines were mailed in the postoffice. Later in the day, some valentines were distributed by the child postman, while others were called for at the postoffice.

Many other uses were found for the postoffice. Notices, letters inviting friends to the kindergarten, and articles for the "Edison News" were sent through the postoffice.

Each day a postman and two postal clerks were chosen. These had such duties to perform as, cancelling stamps on letters and packages, distributing mail received in the postoffice, and keeping the postoffice clean and well organized. Valuable social learnings resulted from the performance of these duties.

The many spontaneous dramatizations also contributed much to the children's joy in their postoffice and to their understanding of the function of the postoffice in their community.



Interest in the postoffice continued through the remainder of the term.

## OUTCOMES

### SOCIAL LEARNINGS

1. Cooperating with others in group work and play.
2. Learning to participate in group discussion.
3. Contributing ideas to work in hand.
4. Learning to evaluate ideas of others.
5. Learning to be considerate of others.
6. Developing initiative.
7. Learning to be self-reliant.

### SOCIAL SCIENCE

1. Function of the postoffice.
  - a. Importance of postal service in the life of the community.
2. Method of handling the mail.
  - a. Posting of letters.
  - b. Collecting mail from boxes.
  - c. Sorting at the postoffice.
  - d. Cancelling stamps.
  - e. Delivering at houses.
  - f. Sending to the train.
3. Arrangement of postoffice.
  - a. Outer office, service windows, letter and package drops, post boxes, desks.
  - b. Inner office; sorting tables, cancelling machine, mail pouches, scales, trucks.
4. Postal workers.
  - a. Postmaster.
  - b. Postal clerks.
  - c. Postmen; duties, uniforms.
5. Miscellaneous.
  - Use of check in withdrawing money from bank.

### NATURAL SCIENCE

1. Gold fish.
  - a. Habits of feeding, swimming, breathing.
  - b. Care; supplying water, food, some sunshine.
  - c. Beauty of gold fish.

### LANGUAGE EXPERIENCES

1. Taking part in class discussion.
2. Sharing individual experiences.
3. Asking for information.
4. Giving committee reports.
5. Composing notes and letters.
6. Composing articles for the "Edison News."
7. Dramatizing work of postal employees.
8. Learning new terms involved in the study such as: mail pouch, stamp window, postal clerk, address, delivering, distributing.

### NUMBER EXPERIENCES

1. Counting letters, stamps.
2. Measuring paper for stamps, signs, mail pouch.

3. Learning value of stamps.
4. Finding time of collection and delivery.
5. Distances to the mail box, postoffice, etc.
6. Location of postoffice, homes, etc.
7. Distances to postoffice.

ART

1. Making signs.
2. Decorating postoffice.
3. Making valentines.
4. Looking at pictures.
5. Arranging material on bulletin board.

INDUSTRIAL ART

1. Building postoffice.
2. Making street post-box.
3. Making house mail-box.
4. Making mail pouch.
5. Making stamps.
6. Making play money.

MUSIC

1. Learning songs about the postman.
2. Expressing rhythms involved in work of mail service.

LITERATURE

1. Hearing stories based on postal service.
2. Verse about postal service.

BUILDING AN INTEREST IN READING

1. Listening to reading of notes and letters.
2. Listening to reading of stories and verse.
3. Handling of addressed mail.
4. Learning significance of signs.
5. Looking at books.

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## THE FIRST GRADE FAIR

Pearl Budd Jones, Supervising Room Teacher

### APPROACH

The Kittitas County Fair had just preceded the opening of school and because of its recency, if for no other reason, was the one important experience of the summer in the minds of the first graders when they entered school in September.

Mary Ann described a pig that was very large and Betty Lou told about the five puppies she had seen. Verna said, "Mother took some flowers from our garden." Jack had seen some large fish in a tank. Other children had seen turkeys, ducks, chickens, sheep, cows, and horses, and had noticed fruits and vegetables. Other Fair experiences, including the merry-go-round, were discussed.

This sharing of vacation experiences offered both teacher and children an enjoyable means of becoming acquainted. It also suggested to the teacher some vital pupil interests which could be utilized through such an activity as The Fair.

One morning this question was asked. "Would you like to have a fair in the first grade?" The response was an enthusiastic "Yes," followed by such remarks as: "I can bring my dog"; "I think Mother will let me bring some chickens"; "I'll bring my lamb"; "We have a garden"; "I'll bring some vegetables".

The children wanted to have the Fair that very afternoon. They were asked if they could get ready so soon and were told that the people who arranged the Kittitas County Fair had been planning it for a long time. The farmers had to get their animals and vegetables ready during the summer.

"Do you know how the farmer raised the fine animals and vegetables which he brought to the fair?" was asked of the children. They gave some response but all felt that they needed to know more. "How can we find out?" One child said, "Maybe we can go and ask a farmer."

For the next few days everyone was busy asking about farms that we might visit. We were very happy when Helen came with a note inviting us to come to her aunt's farm. Definite preparation was made for this trip, as well as for trips

taken later. This included discussions of the information already known to us, information to be sought, and the best ways of taking care of ourselves. The following standards of conduct were formulated:

1. We should stay together so that we can hear the important things which are told us.
2. We should let our guide lead the way.
3. We should be courteous to each other.

In reply to the question, "What do we want to find out at the farm," the children asked, "Where do the pigs sleep?" "What do horses eat?" Because many of the questions referred to similar topics they were summarized:

1. Where do the animals live and sleep?
2. What do the animals eat?
3. How does the farmer take care of the animals?
4. What do the animals give the farmer?

Various committees were organized to find out and report on information related to each question. Each child chose membership on one of the committees. The following conversation was heard by one of the mothers:

"What committee are you on, Patty?" "I'm on the horse committee."

### TRIP TO THE FARM

On the way to the farm, our school bus was stopped by a band of sheep in the road. The herder and his dogs were with the flock. We learned that these sheep were being driven from the summer pasture on the hills to the valley ranches for the winter.

Farther on, we passed a pond in which a number of white ducks were swimming. Some were sleeping on the bank with their heads under their wings. As we rode along, we noticed hay stacks, fruit trees, and great flocks of blackbirds getting ready to fly south for the winter. All of these experiences were used later.

On arriving at the farm, we were greeted by Mrs. Schnebly. She guided us throughout our visit and explained the farm life and work to the children.

First, we saw two rabbits on the lawn. Mrs. Schnebly showed us their pens and fed them oatmeal and alfalfa.

Next, we went to the pig pen. Some of the pigs were sleeping, others grunting and rooting. One was wading in the stream which ran through the pen. Mrs. Schnebly told us that pigs were fed vegetables, milk, and grain.

After this, Mr. Schnebly joined us and took us to the corral and barns. The children were awed by the size of the work horses and were content to watch from a distance while Mr. Schnebly caught and petted them. They did enjoy taking turns riding the saddle-horse while Mr. Schnebly led it around. In the barn, they saw the stalls, mangers, feed boxes, and hay loft. They also noticed saddles, harness, a curry comb, and some horseshoes.

The cows were in the pasture but Mr. Schnebly rode his horse out and brought one of them in. When the cow went into her stall her head was fastened in the stanchion. Mr. Schnebly then brought a pail and began to milk the cow. The children, fascinated by this, knelt down around the cow, almost under her. We learned that cows eat grass, alfalfa, and some vegetables.

Mrs. Schnebly told us about three calves we saw in a pen. She explained that the Jersey calf would grow up to be a milch cow and that the two Hereford calves would be sold for beef when they were larger.

The chicken pen was another interesting place. Mrs. Schnebly fed the chickens grass, grain, and a prepared chick food. She said that the grass was the chicken's vegetables and explained how the other food contained things which made the chickens grow. The food was placed in trays to keep it clean. We took turns going into the chicken house to see the roosts and nests.

We visited the granary and secured samples of oats, barley, wheat, and corn. We noticed a tractor, a plow, and a seeder. Mr. Schnebly very kindly explained the uses of these machines in his fields.

After thanking Mr. and Mrs. Schnebly and Sally Jo we returned to school.

#### OUTGROWTHS OF THE FARM TRIP

The next day we wrote the following letter.

Dear Mr. and Mrs. Schnebly:

We had a nice time at your farm. We liked to see Mr.

Schnebly milking the cow. Thank you for letting us come to your farm. We are going to make stories about the animals.

Your friends,  
The First Grade Children.

A series of group stories about the farm experiences, such as the following, provided worthwhile subject matter for beginning reading.

We saw chickens at the farm.  
The chickens were brown and yellow.  
The chickens were in a pen.  
They lay eggs for the farmer.

Later the charts were fastened together with large rings and used as a book. The children enjoyed reading it lying on the floor in the library corner. This experience of re-reading for pleasure was very valuable.

During the social science periods the committees gave their reports. We discussed the questions and the answers we had found on our farm visit.

As an outgrowth of these discussions, the children brought to school many articles such as leather, wool, horse-shoes, grain, etc. These articles were displayed on the table which the children aptly call "The Interesting Table." The children made posters showing animal products. They also made a book for the library which included all of the information they had learned about farm animals. The stories were illustrated with kodak pictures taken on the trip. Margaret Ann's picture of Mr. Schnebly's horse, tied to the barn door, was chosen for the cover. The title selected was "Our Farm Animal Book." On the first page of the animal book were the four general questions which the children had formulated before their trip to the farm. The stories in the book told what the children learned about each of the farm animals.

### **What We Found Out About Pigs**

Pigs live in a pen. They sleep under a shed. The farmer puts clean straw in the pen for the pig's bed. The farmer feeds the pigs milk, grain, and vegetables. He puts the food in a trough. Pigs give the farmer meat. We call it pork. Pigs give the farmer leather. We call it pigskin. Shoes,

gloves, coats, footballs, and many other things are made of pigskin.

In the art period, clay was used in modeling farm animals. Crayons and calsumine were used in illustrating various phases of the trip. The children planned and made a large farm frieze. In planning this, they learned that an artist sometimes puts the most important thing near the center of the picture. Other art principles grew out of this experience because a need was felt for them. Mary Lou was painting sheep in the meadow. Lee said it looked as if the sheep were standing on each other's backs. The children were then shown that distant objects are drawn smaller. This solved one difficulty in perspective.

The question as to what animals should be included in the First Grade Fair was discussed with a great deal of enthusiasm. The result was a decision to exhibit pets.

As a result of this planning, we became interested in knowing more about pets. Many were brought to school before The Fair and were the subjects of more group stories for reading. The most common pets, cats and dogs, were discussed at length in the science period. The learnings from this included characteristics and habits; value as playmates, protectors, and helpers; food, shelter, cleanliness, and the importance of kind treatment. The children told some very delightful and original stories of their play with pets. It was gratifying to know from the various reports that the children's appreciation and responsibilities toward their pets were growing. Marilyn said, "I fed my kitten before I came to school this morning," and Robert, "I made a new bed for my dog in the garage."

Some of the children who did not have pets were planning to bring vegetables for the fair. "What kind of vegetables shall we have at our fair?" they asked. The children named those with which they were familiar. In the naming, they included pickles, pork and beans, and marshmallows. These wrong impressions were corrected. The child who said marshmallows had meant muskmellons. The differences between vegetables and fruit were confusing to many. The need for a trip to a garden was apparent. Verna invited us to visit her mother's garden. We planned the trip and decided to buy some vegetables to bring back to school.



### TRIP TO THE GARDEN

While Mrs. Buxton was taking us around her garden she showed us her garden tools and then explained their use. She told us that the seeds were planted in rows so that they could be irrigated without being washed away. We noticed that the same kinds of vegetables were grouped together. Verna's mother suggested that the children dig up the vegetables which they wished to purchase. They joyfully took turns digging and were interested in the differences in the growth of vegetables. They were also surprised to find pop-corn growing in the garden.

These vegetables were placed on the Interesting Table at school. During the next few days there were discussions about the growth and care of vegetables. This led to a classification according to growth such as roots, vines, and stalks.

### OUTGROWTHS OF THE GARDEN TRIP

Our discussion led very naturally into the use of vegetables as food and the method of preparation for immediate use and canning. The children discussed their likes and dislikes. It was suggested that it might be fun to ask mother to write the recipe for a favorite vegetable dish. Then they could make recipe books and learn to like all vegetables. The children were anxious to do this and through their mothers' fine cooperation they were able to make individual recipe books. Each child designed the cover for his book and printed the title the class chose, "My Vegetable Recipe Book." The first page contained a note of thanks to mother. The recipes on the following pages had such titles as George's Beets, Bennie's Carrots, etc.

The children suggested canning vegetables for the fair. They were to ask mother how to do this. Several of them came back with pint and quart jars, extra vegetables, and some "important ideas." Since this was the busiest part of the canning season at the homes, the children had many things of interest to report.

They learned that mother canned the vegetables to keep them from spoiling. They noticed that some of the over-ripe tomatoes on the "Interesting Table" were beginning to sour and mold. They learned that bacteria which spoil the veg-

etables are killed by cooking; the jar must be sealed tightly to keep bacteria from getting in; cleanliness is an important factor, clean hands, aprons, jars, and vegetables are necessary.

Eugene's mother sent a recipe for canning tomatoes. This was printed and used as reading material in preparation for canning.

The children followed the directions of the recipe step by step while canning. The tomatoes were cooked and sealed in a quart jar. There were a few spoonfuls left which were sampled by members of the cleanup committee. One mother reported that her little girl had never liked tomatoes but when she told of the canning experience at school she said, "Mother, if you could cook tomatoes as good as ours I'd eat them all the time."

The next day we canned a quart of beets. The children were eager to can every vegetable that had been brought to school, but one child happily suggested, "We could make a vegetable stew and eat it."

The following morning each child brought a knife. During the activity period they prepared and cooked the stew. Some children whittled instead of peeled the vegetables and had to be shown a better method. The onion peelers had their troubles. It was hard to scrape corn off the cob and one or two fingers got in the way, nevertheless each child persistently kept on. It was a nice instance of individual effort directed toward group success.

Later in the day the children decorated napkins and planned the management of the vegetable lunch. Table courtesies were discussed. Three committees were appointed to set the table, to serve, and to wash the dishes.

The next morning the stew was reheated and served with crackers. Every child declared this to be the best vegetable stew he had ever eaten.

The writing of a note of thanks to Verna's mother and a story of our vegetable lunch were worthwhile language experiences. There were also many fine opportunities for oral language in the committee reports and class discussion. Many fine contacts with the home were made in this part of the unit.

The children became interested in the canning of fruit

through watching their mothers. They wanted to can fruit for their fair.

Harriet invited us to her home to get some apples. We picked a basket of apples and were given some pears.

The children learned to read the recipes for canning apple sauce and pears and also the story of our trip to Harriet's home.

Language experiences derived from this trip were reports, stories and a letter to Harriet's mother. Worthwhile number experiences were gained in canning; measuring by cupfuls, pints and quarts, counting fruits and vegetables, cutting pears and apples into halves and quarters.

Some of the most valuable language, reading, and art experiences came about through the making of a "movie" which the children named "The Story of Food." The film was planned to show the story of the growth of vegetables from seed to harvest.

The children had collected many nice pictures from seed catalogs and other sources. These they mounted on 9 by 18 sheets of manila paper. They made sentences about each picture and arranged them in story sequence and numbered them. These pictures were then pasted on a long roll of wrapping paper with spaces between pictures for the sentences telling the story. The "film" was then fastened to two rollers set in a box frame. The first picture showed Mother buying seeds, the second a farmer plowing his garden, etc. The children learned to read the explanatory sentences which they had composed for the pictures such as:

"Mother is buying seeds at the store."

"Father is going to plant a garden."

Miss Hebler was invited to see the movie. This gave the children their first audience reading experience which they greatly enjoyed.

## PLANNING THE FAIR

Some of the questions which arose in planning the fair were: How were the vegetable and fruit booths at the Kittitas County Fair made? How were they labeled? How were the animals cared for? How were the pens labeled? What things shall we include in our fair? How shall we arrange our exhibits?

Where and when shall we have our fair? Whom shall we ask to come? How shall we conduct the fair?

The children copied the step-like display shelves they had seen at the Kittitas County Fair by using blocks and boards on tables and covering them with wrapping paper. The exhibits were then placed according to the labels on the shelves.

"These vegetables grow on vines."

"These vegetables grow in heads."

"These vegetables grow on stalks."

"These are root vegetables."

"This fruit grows on a vine."

"This fruit grows on a tree."

One booth contained the vegetables and fruits which had been canned by the children. The booth "Food which Mr. Schnebly gave his animals" included samples of threshed grain, grain on the stalk, alfalfa, vegetables, milk, etc. The exhibit "What we get from animals" included articles from wool and leather, such as clothing, blankets, harness, footballs, and traveling bags. The foods shown were milk, butter, cream, cheese, meat, and eggs.

Other things which were arranged for exhibition at the fair were reading-charts, booklets, letters, stories, the "movie," posters, art work, and the pictures and stories we had enjoyed. Two rooms were used for the exhibits, one for the main exhibits, and a second room for the animals called "The Animal Barn."

Pens for the animal barn were made from boxes. Children who could not bring pets worked on committees with others to build pens. Straw was brought in to make the pens clean and comfortable.

Labels for all the exhibits were devised by the children. Those for the animal pens read: "This is George's Lamb. His name is Tag-Along." "This is Patricia's black dog. His name is Smoky."

Each day when the children brought in vegetables they tried out arranging them in the booths. Sometimes a head of cabbage would be placed by the label for root vegetables. The children who discovered the mistakes were usually very indignant. They realized the need for following directions carefully.

One of the activities which was left until the day preceding the fair was the churning of butter. The churn had been made previously by the children.

### **THE FAIR**

On the day of the Fair, the children brought the animals and placed them in the pens which had been made and labelled for them. The exhibits in the barn included two little pigs, two ducks, a hen, a pair of Bantam chickens, four rabbits, two puppies, two kittens, three gold fish, a canary bird, a lamb, and five dogs. Two boys took charge of the animals and the other children met the mothers and friends who had been invited.

The visitors were first taken to the home room where the aims and purposes of the unit were explained by the teacher. This gave the guests an understanding of the development of this unit and an insight into the rich learning possibilities of activity procedures.

The children then came in, showed their movie, read the stories from "The Farm Animal Book," gave a creative dance interpreting "the Merry-Go-Round" of the Kittitas County Fair. In their singing of a group of farm songs, they concluded with "Who'll Come to the Fair Today?" With this invitation each child took his mother and other guests to "The Fair."

All the children were so familiar with the details of the fair that their joyous explanations gave to the parents evidence of the breadth of learning which the children had gained from this unit.

#### **OUTLINE OF SUBJECT MATTER**

##### **I. FARM ANIMALS.**

###### **1. Cow.**

###### **a. Place of living.**

- (1) Barns and sheds.
  - (a) Stalls, stanchions, mangers.
- (2) Pastures.

###### **b. Food.**

- (1) Hay, grain, vegetables, bran, water, green grass, alfalfa, salt.

###### **c. Care.**

- (1) Brushing and washing.
- (2) Milking of cow.
- (3) Clean straw for bed.
- (4) Clean food and water, regularly given.
- (5) Kind treatment.

- d. Value.
  - (1) Milk, cream, cheese, butter.
  - (2) Meat; beef.
  - (3) Leather; clothing, bags, balls, harness.
- 2. Horse.
  - a. Place of living.
    - (1) Barn.
      - (a) Stalls, manger, feed boxes, hay loft.
    - (2) Pasture and corrals.
  - b. Food.
    - (1) Hay, grain, grass, water, salt.
  - c. Care.
    - (1) Clean straw for bed.
    - (2) Clean food and water regularly given.
    - (3) Currying, brushing and washing.
    - (4) Trimming of mane, tail, and hoofs.
    - (5) Shoeing.
    - (6) Breaking to ride or drive.
    - (7) Kind treatment.
  - d. Value.
    - (1) Working, driving, and riding.
- 3. Pig.
  - a. Place of living.
    - (1) Pen and shed.
      - (a) troughs, wallows.
    - (2) Pastures.
  - b. Food.
    - (1) Grain, milk, vegetables, green plants, water.
  - c. Care.
    - (1) Clean straw and dry place for sleeping.
    - (2) Regular feeding.
    - (3) Kind treatment.
  - d. Value.
    - (1) Meat; pork, ham, bacon.
    - (2) Leather; bags, gloves, footballs.
- 4. Sheep.
  - a. Place of living.
    - (1) Pens, sheds.
      - (a) feeding racks.
    - (2) Pasture.
      - (a) grazing range, on hills and mountains.
  - b. Food.
    - (1) Hay, grain, grass, water, salt.
  - c. Care.
    - (1) Dipping to keep healthy.
    - (2) Shearing.
    - (3) Herding.
    - (4) Feeding.
    - (5) Kind treatment.
  - d. Value.
    - (1) Wool; clothing and blankets.
    - (2) Meat; mutton.
    - (3) Leather.
- 5. Chickens.
  - a. Place of living.
    - (1) Coops, pens.
      - (a) roosts, nests, dust wallows, feeding and watering trays.
  - b. Food.
    - (1) Grain mash, insects, grit, meat, grass, milk, water, oyster shells.

- c. Care.
  - (1) Dusting with insect powder.
  - (2) Feeding.
- d. Value; eggs, meat, feathers.

## II. PETS.

### 1. Dogs.

- a. Place of living.
  - (1) House or kennel; warm, well ventilated place.
- b. Food; milk, cereal, meat, vegetables, water.
- c. Care.
  - (1) Feeding regularly from clean dish.
  - (2) Bathing.
  - (3) Providing clean bed, preferably straw.
  - (4) Kind treatment.
  - (5) Training in good habits.
  - (6) Keeping in suitable place.
  - (7) Licensing.
- d. Value; playmate, protector, helper.

### 2. Cats.

- a. Place of living; warm, dry place.
- b. Food; milk, fish, meat, vegetables, water.
- c. Care.
  - (1) Feeding in clean dish.
  - (2) Providing clean bed.
  - (3) Training in good habits.
  - (4) Kind treatment.
- d. Value; playmate, catch mice.

## III. VEGETABLES.

- 1. Planting of seeds.
- 2. Care of plants; watering, weeding, thinning, harvesting.
- 3. Differences in growth.
  - a. Under ground; tubers and roots.
  - b. Above ground; stalks, bushes, vines.
- 4. Food.
  - a. Parts of plant used.
    - (1) Roots; carrots, radishes.
    - (2) Tubers; potatoes.
    - (3) Leaves; spinach, lettuce.
    - (4) Seeds; beans, peas.
    - (5) Fruit; tomato, pumpkin, squash, cucumber.
    - (6) Stalks; celery, asparagus.
    - (7) Heads; cabbage, brussell sprouts.
    - (8) Flowers; cauliflower.
  - b. Preparation.
    - (1) Serving uncooked.
      - (a) Methods of preparing.
    - (2) Cooking.
      - (a) Following recipes.
    - (3) Canning.
      - (a) Reason for canning.
      - (b) Process.

## IV. FRUIT.

- 1. Fruit grown in this community.
- 2. Growth of plants; trees, vines, bushes.
- 3. Harvesting.
- 4. Preparation; serving fresh, cooking, canning.

**OUTCOMES**

**I. READING.**

1. Group stories about farm animals, pets, and trips.
2. Posters about animals.
3. Signs and labels for fair exhibits.
4. Recipes for canning.
5. Short letters and notes.
6. The "Movie" stories.
7. Bulletin board notices.
8. Seat-work based on farm stories.
9. Pre-Primers listed in bibliography.
10. Directions for working.

**II. LANGUAGE.**

1. Original stories about pets and other interests.
2. Discussion in planning trips, planning the fair, making butter, preparing vegetables and canning.
3. Composing story of the "Movie."
4. Making stories for the animal book.
5. Reporting trips.
6. Composing invitations.
7. Composing stories for the school paper.
8. Composing letters and thank-you notes.
9. Explaining the exhibits to guests at the fair.
10. Making talks at an assembly program.
11. Listening to stories and poems for enjoyment and appreciation.
12. Learning the poem "Mr. Carrot."

**III. NUMBERS.**

1. Knowledge of pound, dozen, pint, quart.
2. Ability to measure feet and inches in making pens and booths.
3. Writing numbers on pages of booklets.
4. Numbering "Movie" pictures in sequence.
5. Counting napkins, dishes, and spoons for the vegetable party.
6. Recognizing numbers in reading recipes.

**IV. WRITING.**

1. Writing names of animals.
2. Writing names of vegetables to use in the booths.
3. Writing names in signing up for duties and committee work.

**V. ART.**

1. Appreciation and enjoyment of pictures.
2. Clay modeling of animals.
3. Creative drawings of farm and other experiences.
4. Making "The Farm" frieze.
5. Making animal posters.
6. Mounting pictures for the "Movie."
7. Decorating napkins for the vegetable lunch.
8. Designing covers for the recipe and farm animal booklets.
9. Arranging exhibits for the fair.

**VI. MUSIC.**

1. Animal tone calls.
2. New songs related to the unit.
3. Rhythmic games of running, trotting, galloping, and high-stepping horses.
4. Creative dance, "The Merry Go-Round."



**VII. HEALTH.**

1. Learning to eat various kinds of vegetables and fruit and to drink milk.
2. Realizing the importance of cleanliness.
3. Realizing the importance of regularity in daily habits.

**VIII. GENERALIZATIONS.**

1. All people are dependent upon the farmer for much of their food.
2. Animals are of value to man in providing food, clothing and serving as helpers and friends.
3. Animals are dependent on man for food, shelter, and kind treatment.
4. Good soil and care are necessary to growing plants.
5. Germs are killed by heat.
6. Fruit, vegetables, and milk are necessary to good health and growth.
7. Success in group work is best realized when each person does his part.

**IX. SOCIAL LEARNINGS.**

1. Appreciation of the farmers' part in giving us food and clothing.
2. Appreciation of mother's work in the home.
3. Appreciation of things done for us by others.
4. Appreciation of the service and value of animals.
5. Working with others toward the success of a group activity.
6. Learning the need for following directions carefully.
7. Learning to assume the responsibility of doing one's part of a task.
8. Learning to be courteous and considerate of other people.
9. Learning to share ideas and materials with others.
10. Learning to be able to concede to the wish of the group.

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## INSECTS

Irene Davies, Supervising Room Teacher

Soon after school began in September, several children brought insect specimens to school. The children were always eager to show and tell the group about the specimens in the fifteen-minute conversation period.

During class discussion on how men, birds, animals, and insects prepare for winter, the children invariably commented on insects. Some of the erroneous statements that were made led the teacher to feel that there was a need to know more about insects.

One day the teacher proposed the following: "If you could study anything you wished, what would it be?" The children unanimously responded with the wish to study insects. The next day the group discussed insects in general and the following questions were asked: How do insects live during the winter? Where are their eyes and ears? What do they eat? Where do they live? How do they protect themselves?

The children became very observing and searched for insects on the way to and from school because they decided that it would be helpful to have the real insects to observe and study. Bobbie thought it would be nice if each child would make an individual collection of insects. When asked if they knew just how many of each kind of insect would have to be killed for each to have a specimen, the class realized that thirty of each kind would be too many insects to kill. This led to a discussion as to whether or not insects were all harmful and should be killed. After some discussion, the group as a whole decided that one collection for the class would be sufficient. In this way they would avoid killing so many insects until they were better informed as to harmful insects that should be destroyed and those that are helpful.

Following this discussion, it was decided to take a trip to find specimens and also to see some of the different things which some of the children had seen on their way to school. A bee and a skipper were caught. The children had hoped to find a grasshopper and a cricket, as these seemed to interest them most at the time.

On returning from the trip, one child asked: "Where are the grasshopper's ears?" "Does a grasshopper really spit tobacco juice?" "Where do they live?" Some of the boys made a cage by covering the open side of a box with wire. Ralph and Joe caught a few grasshoppers to put into it. The children all helped in giving the grasshoppers fresh grass each day. By this means they were able to watch the grasshoppers eat. They found that the grasshopper holds the grass between its two front legs and bites it off from the top, eating downward. It was also discovered that the jaws move sideways when biting and eating. A grasshopper's head was examined under a microscope, loaned to the class by Mr. Quigley of the science department of the Normal School. The teacher stimulated and supplemented observations by giving necessary information.

#### SPECIFIC LEARNINGS ABOUT GRASSHOPPERS

1. Grasshoppers live in the fields and meadows and eat grass.
2. Their song is made by rubbing the leg over the wing cover or by rubbing the hind legs together with great rapidity.
3. They have three small eyes and two large ones, each of which is made up of many little eyes.
4. All grasshoppers have wings. The grasshopper's ears are under its wings.
5. They hold the blade of grass between their feet while eating and eat from the top of the grass downward. Their jaws move from side to side.
6. Their hind legs are strong and are used for jumping. When they jump to get away from an enemy, they turn in the air and land facing the pursuer. When caught, they spit a brown, sticky fluid, thinking this will bring them freedom.
7. They lay their eggs near the surface of the ground, then they usually die, though some of the adults pass the winter in hibernation.
8. The babies hatch in the spring. They look like their mother, except that their wings are small. They are called nymphs.

## BUTTERFLIES AND CATERPILLARS

One day Marilyn brought a woolly-bear caterpillar to school. She put it in a box with some leaves. The following morning it had fastened itself to one of the leaves and had begun to spin its cocoon. The class watched it closely until they knew just how the cocoon was made. By the next morning it was completed. Early in March a moth came out. The woolley-bear caterpillar usually spends the winter in hibernation and spins its cocoon in March, but due to the warm temperature of the room, this one had spun earlier.

Other chrysalises, cocoons, and caterpillars had been brought to keep during the winter. They were kept in a ventilated box with a glass sliding top. In this way it was possible to keep the soil in the box damp and to watch for the butterflies and moths as they hatched. The caterpillars shed their last skins and became chrysalises while in the box.

It was most interesting to the children to watch these changes. Four swallow-tail butterflies, one small moth, and two large moths, hatched in the room. One of the larger moths laid eggs in the box. During this time, class discussions were held to find out everything possible about the habits and life stages of the butterfly. One day Mr. Quigley invited us to his laboratory to see a movie of some butterflies. On returning to the classroom, the children wrote the following "Thank you" note:

Dear Mr. Quigley:

We enjoyed the movies very much. Thank you for inviting us to see them.

Your friends,

The Second Grade and Miss Davies.

One of each kind of butterfly caught was mounted. To do this, Bobbie's cyanide jar and drying board were used. The butterfly was put into the jar and, when dead, was placed on the drying board. The wings were spread and card-board fastened over them to keep them in shape while drying. When thoroughly dry, they were ready to mount. This same process was used for each of the winged specimens of the collection.

## SPECIFIC LEARNINGS ABOUT BUTTERFLIES AND CATERPILLARS

1. Moths fly at night while butterflies fly during the day.
2. Moths come from cocoons while the butterflies come from chrysalises.
3. Butterflies have long tongues which they keep curled up when not eating.
4. The butterfly or moth lays its eggs in the spring under a leaf which will serve as food for the caterpillar after the eggs hatch. The insect then usually dies. The monarch butterfly migrates in the fall and spring.
5. Some eggs look like drops of honey. They hatch into caterpillars in about ten days. These sometimes have big make-believe eyes to frighten their enemies. Some have hairs that are prickly. Others spit a fluid.
6. During the larva stage, caterpillars do nothing but eat. As they eat and grow they shed their skins three or four times, the last time in a week or ten days after hatching. They then turn into a chrysalis form or spin a cocoon.
7. The change from the caterpillar to the adult goes on inside the cocoon or the chrysalis during the following winter and in the spring the full grown adult moth or butterfly comes out.
8. The woolly-bear caterpillar fastens itself to the leaf before beginning to spin. It sheds its hair when spinning and mixes it with the silk fluid that comes from inside the caterpillar. It does this by turning around and around.

## DRAGON FLY

One day Mrs. Jones, the first grade teacher, found a dead dragon fly and gave it to one of the boys. This at once aroused interest. The story of the "Darning Needle" was explained in its true sense.

## SPECIFIC LEARNINGS ABOUT THE DRAGON FLY

1. The dragon fly lives near the water.
2. It usually eats flies and mosquitoes. When very hungry it eats its sister or brother or anything else it can get.

3. It drops its eggs into the water and leaves them entirely alone.
4. The baby dragon fly looks something like a spider. It comes out of the water just before shedding its last skin. It is then a dragon fly.
5. Its wings move very rapidly aiding it to stay in one place for a long time.

### **THE YELLOW JACKET**

Later, three or four of the children found an old wasp's nest with the outside partly destroyed, showing the layers of honey comb and the baby wasps that had failed to leave their home before it was destroyed. Questions were asked by the children as to: "What are those things in the cells?" "What is the nest made of?" They decided they wanted to study the yellow jacket. This insect was one which they knew very little about and consequently found it unusually interesting.

#### **SPECIFIC LEARNINGS ABOUT THE YELLOW JACKET**

1. The queen selects the place for the hive and begins to build.
2. The material for the walls of the hive is made from the bark of dead trees or old logs. The queen chews the bark into a little ball, mixing it with a sticky fluid, and spreads it out on the branch of the tree. This is continued until there is enough wall to cover one layer of honeycomb.
3. Then the queen lays an egg in each cell, and fastens it to the bottom of the cell. After the egg is hatched she feeds the grubs with spiders or mosquitoes chewed up fine.
4. When the grub is fat enough to fill the cell, it spins a cover over the opening. While inside the covered cell, it sheds its skin and later, as a full grown wasp, bites its way out.
5. Most of the young wasps are workers which continue the building of the nest and feed the larvae.
6. The opening of the nest is at the bottom. The wasps stay at the opening as watchers.
7. The wasps get their food from flowers, and eat spiders, flies and mosquitoes.
8. In the fall all the wasps die, except the queen who lives in the ground during the winter.

9. Wasps are very nervous and detect the same trait in human beings.

## SPIDERS

The children wanted to know about spiders when a spider's egg-bag was given them by one of the Normal School students. They then watched for spiders and spider webs. Bobbie found a funnel-shaped web on his way to school the following morning. A trip was planned to see this web and also to try to find other kinds of webs. While on the trip, Walter discovered a black spider. This was brought back to the classroom for study. As a result of the spider study, an important objective of the insect unit was realized. It was necessary to know how to distinguish insects from spiders, because the spider is not a true insect. The children found that the spider has two parts to its body and eight legs while a real insect has three parts to its body and six legs. With each spider its cobweb was also studied. The following outline indicates what the children learned from these discussions and observations.

### LEARNINGS ABOUT SPIDERS IN GENERAL

1. A spider is not a real insect because it has two body parts and eight legs.
2. Spiders have spinnerets which are on the under side of the abdomen.
3. The silk is a liquid which hardens when it comes in contact with the air, and is very strong.
4. The threads that are fastened to the twigs or branches are not elastic, while those in the center are. The spokes are spun from the center out, and the spider's web is a very wonderful and beautiful thing.
5. Spiders are very solitary. They do not all have good eyes, and they feel with their legs.
6. Not all spiders spin webs.

### BANDED SPIDER

1. This spider often lives in the garden and is sometimes called the garden spider.



2. It catches flies for food. It waits in the center of its web until a fly gets caught. Then it sticks its poisonous fangs in the neck of the fly, kills it, and sucks its blood.
3. The mother spider spins a balloon-shaped silk bag which contains approximately 500 eggs and fastens it to twigs or branches. The bag has a waterproof silk covering. She does not watch the eggs but dies before the babies are hatched.
4. The babies hatch in the spring and stay in the bag until they are four months old, when the hot sun cracks the balloon open. Then they climb to a high spot, spin a silk thread, and fly through the air, spinning their webs where they land.

#### TRIANGULAR SPIDER

1. Spins a triangular shaped web to trap prey.
2. A thread leading from the center of the web to a bush serves as a telephone wire and tells the spider when a fly is caught in the web.
3. The spider can tell the difference between the movements of the web made by the wind or a fly.

#### GRASS SPIDER

1. This spider builds a funnel shaped web on the ground, and fastens it to the grass.
2. When the spider catches food in the web, she runs up the funnel shaped tube to seize it. The opening at the other end of the web is used as a means of escape.

#### JUMPING SPIDER

1. Has sharp eyes and stout legs which aid in catching its food.

#### CRAB SPIDER

1. Walks sideways.
2. Hides in flowers while waiting for a bee or butterfly.
3. Is the color of the flowers. Some have ability to change their color.
4. Sticks fangs into his enemies.

5. Stops hunting for food when ready to raise a family, spins a thimble-shaped egg bag which has a tight fitting lid and guards it from a distance.
6. In five weeks when eggs are hatched, the mother spider makes a hole in the bag for the babies to get out. Then she dies.

#### FILMY DOME SPIDER

1. The web looks like a bowl upside down, and has many criss-cross threads above the dome so that insects cannot escape.
2. The spider keeps the web clean and free of twigs and remains of dead insects.

#### CRICKETS

One morning during a conversation period Ralph asked, "Are the cricket's ears under its wings like the grasshopper's?" This naturally led to other questions about the cricket. Some of the boys tried to catch one, but were unable to. They said, "They slip right out of our hands." From this they learned that the cricket's smooth back was one means of protection. It was possible to compare the cricket with the grasshopper in many ways.

#### SPECIFIC LEARNINGS ABOUT THE CRICKET

1. Its home is in damp dark places usually such as cellars, under rocks, and weeds.
2. It is shiny black, and its back is smooth. This is a means of protection as it slips through hands, etc., very easily.
3. The cricket has wings and wing covers, but the wings are small due to disuse.
4. The cricket's ears are on its hind legs.
5. It will eat almost anything and likes juicy fruit, vegetables, grass, and insects. Some crickets will eat clothing.
6. It lays its eggs near the top of the ground in the fall. After laying them it usually dies. The eggs hatch in July.
7. The female has an ovipositor at the end of the body which it sticks into the ground when laying its eggs.

### THE FLY

One warm day when the flies seemed most annoying one child suggested that it would be fun to study the fly. Another asked "Where do they go in the winter?" Some children who thought they knew offered information. As they didn't agree it was decided to leave the question unanswered until the next day when it could be discussed more thoroughly. This gave each child a chance, through reading or questioning, to find out for himself. It so happened that no one was able to find the correct answer to this question. The teacher had to give the correct information about this and other questions for which satisfactory answers had not been found. The fly's wings, head, and feet were examined under the microscope.

The following letter was sent to remind Mr. Quigley that the children were interested in seeing his slides about flies.

Dear Mr. Quigley:

We are enjoying the microscope, bug collection, and books you brought us. We would like to come over to see the slides some day soon.

Thank you very much.

Your friends,

The Second Grade and Miss Davies.

The class went to see the slides the next day. Mr. Quigley told something interesting about each picture as he showed it.

#### SPECIFIC LEARNINGS ABOUT FLIES

1. The fly lays its tiny eggs around barns and in debris. In a few hours the eggs hatch into little maggots. These eat and eat until their skin turns brown and thick.
2. In about five days, they shed their skin just once before becoming a fly. They are full grown when they first appear.
3. The fly has sticky pads on the bottom of its toes to aid it in climbing and walking upside down. The many hairs on its legs pick up germs.
4. Its mouth, chin, and tongue are all in one. It is used as a rasp, and when not in use it can be folded.
5. The adult fly has two large eyes and three little eyes.

6. The adult fly crawls into crevices to spend the winter. Sometimes it dies.
7. Debris should be cleared away, then flies will not have a good place for depositing their eggs.

The children and teacher received a great deal of help in this study of insects from Mr. Quigley of the Normal School Science Department. In addition to the microscope, he loaned them pictures, books, and collections of harmful and helpful insects.

### RELATED ACTIVITIES

Each reading group read stories of insects found in their readers. The children looked through the library books for stories and prepared them to read to the class. Stories and poems were found in books at home which were brought to school to share with others. During the regular reading period group compositions and letters were prepared to be read at the Assembly program.

"Thank you" notes, letters, and interesting stories about each insect and trip were written as group projects. The children decided the subject matter for each story and formed the sentences as the teacher wrote them on the board. Sentences were evaluated and re-written when necessary to make a story that satisfied the group. These were put on the bulletin board and printed in the Edison News.

### EXAMPLES OF CHILDREN'S COMPOSITIONS

#### "Spider's Balloons"

After the spider hatches, it crawls up to some high place. It spins a long silk thread. This long thread is called the spider's balloon or airplane. The wind catches it and it sails away. Wherever the spider lands it spins its web.

#### "Grasshoppers"

The grasshopper's ears are under its wings. It has two large eyes and three little eyes. All grasshoppers have wings. The baby grasshopper looks just like its mother. But its wings are small. The baby grasshopper is called a nymph.

While discussing ways in which the class might share their

information about insects with the rest of the school, the children decided to give an assembly program. In discussing ways of giving the program the children agreed to include exhibits of the specimens collected, talks explaining the exhibits, oral reports regarding the insects studied, songs, and stories. The program included the following topics: "Dragon Flies," "Butterflies," "Wasps," "Our Trips," "Spiders," "Grasshoppers," and songs, "The Fly," "The Caterpillar and the Bee," and "The Cricket."

Each child in the room had some part in presenting the program, as well as in helping to plan it. The talks by the individual children were given somewhat as follows:

"One day we went to see the slides Mr. Quigley told us about. We saw many interesting pictures about bees, spiders, and butterflies. Mr. Quigley told us many interesting things about them. He showed us a trap-door spider's home."

There were many subject-matter learnings included in the unit as indicated in the following outline:

### READING

1. Reading of stories of insects found in readers.
2. Looking through library books for stories which were then prepared to be read to the class.
3. Finding stories and poems in books at home which were brought to school to be shared with the group.
4. Preparing stories for the assembly program.
5. Reading of group compositions and letters.

### LANGUAGE

1. Writing of "Thank you" notes and letters asking for information.
2. Group discussions of insects.
3. Listening to stories and poems read by the teacher.
4. Telling about things which had been observed.
5. Writing group stories about insects. These were put on the bulletin board and printed in Edison News.
6. Planning the assembly program.

**MUSIC**

1. Learning songs for pleasure and for the assembly program.  
    "The Fly," Music Hour.  
    "The Caterpillar and the Bee," Progressive Series.  
    "The Crickets," Progressive Series.
2. In music, the same standards were held to as in all good music work, clear light voices, distinct enunciation, and proper rhythm.

**ART**

1. Drawing pictures of the first butterfly that came from the cocoon.
2. Making pictures of a chrysalis, cocoon, dragon fly, bee, etc. The following standards were set up before drawing: use large figures, have subject fit the paper, have it stand out by size, color, and position.

**INDUSTRIAL ART**

1. Some boys fixed a box into a cage for the grasshoppers.
2. They cut and painted a board used for mounting the insects.

**GENERAL OUTCOMES**

1. A growing interest in insects in the second grade and in the whole school.
2. A greater appreciation of the wonders and beauties of nature.
3. A feeling of protection toward insects instead of wishing to torment them.
4. A fund of information about the yellow-jacket, grasshopper, butterfly, cricket, and spider.
5. A desire to share information with others.
6. In connection with the program the children learned it was necessary to:
  - a. Talk clearly and distinctly.
  - b. Hold the book away from the face when reading a story so that the audience can hear.
  - c. Stand straight with feet together.
  - d. Know the material well before telling.
  - e. Evaluate material to be told in assembly. Tell the important things.

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## INDIANS OF THE PACIFIC NORTHWEST

Mabel Anderson, Supervising Room Teacher

### APPROACH AND GENERAL PROCEDURE

The Ellensburg Rodeo took place the week preceding the opening of school in September. The first day of school the chief topic of conversation was the Indians whom everyone had seen in the Rodeo parade and at the Indian village at the Rodeo grounds. The children talked especially about the beautiful clothes the Indians had worn in the parade.

Questions arose such as:

1. Do the Indians always wear such beautifully decorated clothes. If not, on what occasions are they worn?
2. How do they dress everyday?
3. Do the men and women wear the same kind of clothes?

Other questions were:

1. What kind of bows and arrows did the Indians use?
2. What did the Indians eat?
3. How did they cook?
4. What games did they play?
5. How did the Indians travel?
6. What kind of houses did they live in?

Since the questions came so rapidly, we decided that we could discuss only one topic at a time.

When put to a vote, the children seemed most eager to learn more about clothing. So this was the first topic to be considered.

### CLOTHING

Donald said that he had seen pictures of Indians wearing only breechcloths while most of the Indians in the parade had worn buckskin clothing. This led to a discussion of differences in clothing because of climatic conditions. Indians who lived in warm climates, like the Hopi and Navajo tribes, needed less clothing than those who lived in a colder climate like the Indians of the Northwest. Since comparisons and con-



trasts would be necessary from time to time we learned the names and locations of several Indian tribes.

Hopis—Arizona, New Mexico.

Navajos—Arizona, New Mexico, and Utah.

Blackfoot—Montana.

Tribes of the Northwest—Washington, Oregon, Idaho.

Because there were definite variations in modes of living among Indians of the Northwest, we decided to think and speak of these tribes as "coast" and "inland" Indians. During the brief discussion of tribes, the teacher read the legend "How Indian Tribes Came to Be," from Lyman's "The Columbia River."

In the meantime every available book on Indians from our Training School Library had been brought into the room. These were placed on our reading table with book marks in the places which told about Indian clothing. The children read and reported to the class until we felt we needed to organize the material presented. This organization of material is summarized in the following outline:

I. Present day clothing.

Indians buy ready-made clothing and dress like the whites.

II. Early Indians dressed according to climate.

1. Inland Indians—clothes made of tanned hides.

Women wore long shirt-like dresses, short leggings, moccasins, small basket-like hat, blankets.

Men wore shirts, long leggings like trousers, moccasins, breech-cloths in warm weather.

Children dressed like parents.

2. Coast Indians used some skins. Much of clothing was made from cedar bark. Some materials were woven from hair. Shirts, capes, long hats were worn to keep off rain.

3. Hopi and Navajos.

Women wore full skirt, bright blouses.

Men wore shirts, full trousers like Mexican. Navajos wove beautiful blankets and rugs because they had sheep.

III. Ceremonial dress (still worn on special occasions)

1. Highly decorated clothing; beads, fringe, porcupine quills, sea shells, teeth of animals, feathers, and bird beaks.

## 2. Head dresses; horns, feathers, head-bands.

Pictures which emphasized clothing were posted on the bulletin boards.

The children read "A Queer Dress for a Doll" in Lincoln Reader, Book III. This story led to a discussion of dressing and tanning skins. Jimmie and Roy brought rabbit skins to school. We tanned and dressed these skins, using the following procedures:

### Tanned Skins (hair removed)

1. Soaked skin in tannic acid solution.
2. Scraped off hair.
3. Stretched skin on board to dry.
4. Rubbed in olive oil to soften skin. (Indians used brains of deer.)
5. Worked skin over back of a chair to make it soft and pliable.

### Dressed Rabbit Skin (hair left on)

1. Stretched skin on board, hair side against board.
2. Rubbed strong alum and salt solution in hide many times.
3. Scraped skin to remove all flesh.
4. Rubbed in olive oil.
5. Worked skin over chair back to make it soft and pliable.

The children gained very clear ideas of the difference between tanning and dressing skins. They were interested in pictures of Annie Moore, a local Indian, tanning hides. One picture showed a hide stretched on a frame for drying and another a hide being smoked.

In order that the children might better understand the making of clothing, the group decided to make a buckskin dress. We borrowed a new buckskin dress from Annie Moore, which she had just finished to wear in the rodeo parade.

This gave us ideas regarding the making of the dress. We purchased a tanned skin from her, and decided to make the dress as much like hers as we could. First we cut a paper pattern of a dress large enough to fit a kindergarten child since there wasn't enough buckskin for a larger dress. Then the

buckskin was cut out. Because the skin was heavy, the teacher stitched the side seams on a leather sewing machine. The children cut the fringe, planned and made the decorations, using beads, porcupine quills, and shells.

## DESIGNS

There were strips of buckskin left from the dress so the boys and girls decided that they would like to make a bag out of the pieces. We had talked some about designs in connection with the decorations on clothing. We had learned that beads, porcupine quills, shells, and fringe were most commonly used. Now we studied the meaning of designs. The children made designs and we chose the most suitable to use in beading the bag. Marilyn's "lightning" was chosen and Joel's "swastika." All of the children had a chance to help in beading. By this time beaded bags, belts, and moccasins were being brought to school and displayed in exhibit cabinets. The children enjoyed making designs so much that some of them decorated book marks with various Indian symbols. Another group made a wall-panel, using these designs.

## MUSICAL INSTRUMENTS

Bobby brought an old tom-tom to school one day. He said that he had seen an old Indian beat a tom-tom and call out an announcement at the Rodeo grounds. We discussed the use of the tom-tom in giving signals in early days. We also discussed the flageolet, the only Indian instrument upon which a tune could be played. It sounded much like a flute. Other instruments that the Indians used were both single and double headed drums, notched sticks, rattles, whistles, and bells. To show the peculiarities of Indian rhythm we used phonograph records as given in the reference list. (See page 59).

We learned that all dances have meaning; such as rain, praise, thanksgiving, hunting, birth, and death.

The medicine men were referred to many times. We learned that medicine men were supposed to have had supernatural power and could cure the sick. They believed in fetishes, charms, and magic, and offered prayers especially to the sun. Herbs were used in making medicines.

## HOMES

One rainy morning Ralph asked "How did the Indians manage to keep dry in their tepees when it rained?" This led us to the discussion of early Indian homes. Again the children eagerly searched for information.

A Denver Art Museum leaflet No. 34 furnished information on the long houses of the Coast Indians. Because of the heavy rains on the Sound the Indians there needed waterproof houses which they built of cedar logs. Then too, these Indians did not move about much to obtain food, so they built permanent homes. Tepees, brush houses, and underground houses were used by the Inland Indians of the Northwest. The children were familiar with the hogan type of shelter of the Navajos as the teacher had read to the children Brandeis, "The Little Indian Weaver." We also learned of the pueblo homes.

To answer Ralph's question we decided to go and look at an Indian tepee. This tepee belonged to Cecilia, a well-known local Indian woman, who lived about seven blocks from school. Mrs. DeArmand, a friend of Cecilia's went with us to act as interpreter.

We discovered that the tepee had many layers of skins, blankets and mats. As the weather grew colder, the Indians added more thicknesses to the tepees to keep out snow, wind, and cold. The tepees were staked down and the earth was banked around to keep out the cold.

\*Cecilia with her sister, Mary Moses, now lives in a little shack which the county built for her. She uses the tepee for a storehouse. We saw saddles, hides, old clothes, and mats stored in the tepee.

As our interpreter talked with the Indian woman, she explained that the children were their "tillicums" or friends. The children were very much interested in the language which sounded so strange to them and learned the following words from Mrs. DeArmand: tillicum, friend; muck-a-muck, food; vamoose, go away; pot-latch, give; ichew, thank you; mash-ema, mother.

We saw fish and berries drying on mats which had been

\*Cecilia died in June, 1934.

spread out on the porch. We took several pictures of Mary Moses and the tepee.

On our way back to school the children wanted to know more about Cecilia and Mary Moses. Who were they? Who was Chief Owhi? Mary Moses had shown us the picture of a dignified looking Chief, Owhi.

This is the information Mrs. DeArmand gave us.

Cecilia, best known, living local Indian, sister of Mary Moses. She is often seen in town both on foot and on horseback.

Mary Moses, widow of Chief Moses.

Chief Moses, local chief in early days. Treacherous until he was sent to Washington, D. C., to confer with the President, about 1880.

Chief Owhi, father of Cecilia and Mary Moses.

Chief Shooshooskin, owned first plow in the valley. Shooshooskin Canyon road, an old Ellensburg-Yakima road was named for him.

Following the trip to Cecilia's home, the children made a tepee. Bobby, Gale, and Junior brought poles of the desired length and the children set to work making and setting up the tepee. A cheap burlap-like muslin was used for the covering. The children planned the size of the tepee, cut the material, sewed the seams, allowed for the smoke hole and cut the pegs with which to fasten the front of the tepee together. What fun the children had after the tepee was set up and they discovered that six or eight of them could get inside of it at one time!

We experimented with natural materials which the Indians might have used to make dyes for decorating their tepees. We made brown from walnut husks, yellow from onion skins, reddish purple from elder berries, and red from beets. These dyes were used in painting designs on the tepee.

Since we had seen reed mats at Cecilia's home, we decided we wanted to make some. A group of children gathered cattail reeds from a marsh near the river. They made two mats about 30 inches by 36 inches which were tied together like those seen at Cecilia's home. The Indians used mats to sit on, for tepee coverings, floor coverings, and for drying berries, roots, and fish.

At this time, Miss Ryan, a missionary to the Hopi Indians in northern Arizona, spoke to us at an assembly program. She told us many interesting things about the dress, homes, food, schools, and ceremonies of the Hopis. From among the things which she exhibited, we were able to buy the following for our permanent Indian exhibit: a basket made of yucca, a rattle, a kachina doll made of cotton wood, and a napkin ring made of clay and interestingly designed.

After Miss Ryan's talk, the children wanted to know if all Indians ate as much corn as the Hopi Indians. We decided to see what we could learn about food. We read "Our First Gardeners", page 194 and "Yellow Corn", page 264, in Lincoln Readers, Book III.

Again we started with the food of the local Indians in early times. We found that game was the chief food of the inland Indians. Ways of hunting game, especially buffalo, were told in Schultz' story of "Sinopah." After several days of diligent searching for information, followed by much discussion, we made this summary.

## FOOD

### Inland Indians.

Chief food, game.

Other foods, fish, birds, wild potatoes, roots, berries, fruits, nuts, and seeds.

### Coast Indians.

Chief food, fish, especially salmon.

Other foods, shell fish, some game, berries, cedar roots, bark, seeds, nuts, wild vegetables, seaweed, birds' eggs, and fish eggs.

In answer to the question, "Do all Indians eat as much corn as the Hopi Indians?" we learned that the Navajos and Hopis raised and used much corn but the Indians of the Northwest used very little corn because they did very little farming.

## WAYS OF MAKING FIRE

We learned about ways of making fire from Dearborn, "How the Indians Lived," pages 68-73; rubbing sticks, striking rocks, palm drill, strap drill, and bow drill.

The question arose "How was food prepared when there

were no stoves in those days?" This information was found and reported upon by two of the girls. They explained that Indians used four ways of cooking; roasting over open fires, cooking in baskets in which hot rocks were placed to heat the water, steaming in a pit, and roasting or baking food in ashes.

After learning about the things that might be included in an Indian meal, we thought that we could make a rabbit stew which would be most nearly like Indian food. We made our plans for preparing the stew and, following Billy's suggestion, invited some of the teachers. We decided to have a party during the luncheon period the next day. Since camas, wild potatoes, and onions could not be obtained at this time of the year, early October, we brought vegetables from home. Each child brought a potato, carrot, onion, turnip, small cabbage, or some corn on the cob.

Committees were chosen to share the work, to write and deliver invitations, to cut vegetables, to get wood and keep the fire going, to get dishes and silver from the lunchroom, to serve, and to clean up.

The group organized and wrote invitations to our guests as follows:

Dear Miss Hebel:

We would be very glad to have you come and have muck-a-muck with us tomorrow at 11:50. Please meet us on the west sidewalk by the lunch room.

Your tillicums,

The Third Grade.

The following story of the party was written by the group for their Indian booklet.

### **OUR INDIAN PARTY**

When we were studying about what the Indians ate, we decided it would be fun to cook some food the way the Indians did.

We bought a rabbit and Mrs. Gibson dressed it for us. Since it was the wrong time of the year to get camas, Indian potatoes, or wild onions, we brought potatoes, carrots, onions, cabbage, and corn from home. We cleaned the vegetables and cut them up.

Bill Hooper and Beckwith Hubbell, from the sixth grade, built a fire for us out-of-doors. They tried to use a bow drill but the thong broke so they had to use flint and steel. When we had a good fire we cooked the stew over the open fire. We roasted some corn in the ashes. We cooked some corn in a kettle, too.

At noon we sat in a big circle under the trees while we ate. It was fun to pretend that we were Indians.

We invited Miss Hebler, Miss Simpson, Miss Meisner, Miss Davies, and Mrs. Gibson to have muck-a-muck with us. We all had a very good time.

### POTTERY

We learned about Indian pottery from reading "How Clay Dishes Were Made," page 27, in "Pathway to Reading," Book III; and "Indian Pottery," page 266 in Freeman-Storm, "Child Story Readers," Book III.

Spoons were made of bone and wood. The Indians on the Sound used shells for spoons, cups, and bowls.

We made interesting clay bowls of many different shapes. Each child made his own design which he painted on his bowl. Since we could not fire our pieces of pottery we gave them a coat of shellac which helped preserve the clay and paint. The children were happy to use their bowls as Christmas gifts for their mothers.

### GIFT FOR PERMANENT COLLECTION

One day Miss Meisner came to our room and asked us if we liked surprises. Of course, we all answered "yes" most emphatically. She presented us with an interesting old Indian cedar basket designed with Indian basket grass. This basket was so large that Miss Meisner had used it for a waste paper basket. She also gave us a piece of obsidian, which the Indian used for making arrow heads. The children wrote Miss Meisner the following "thank you" note:

Dear Miss Meisner:

We are very glad that you gave us the piece of obsidian and the lovely Indian basket. It is the third basket we have in the permanent school collection. One of the others is a small basket made by the Makah Indians who live on the coast. The other is a Hopi basket made of yucca.



Would you like to know what other things are in the collection? There is a small Navajo rug and also a rug on a loom. Then we have a rattle, kachina doll, and a napkin ring from the Hopi tribe. There is a totem pole made by Alaskan Indians. We have an awl case made by the Indians in Wisconsin. We have three pieces of pottery.

Thank you for your gifts.

Your friends,

The Third Grade.

### WEAPONS AND TOOLS

The piece of obsidian proved to be just what we needed to get us into the discussion of weapons and tools. Richard, whose mother has a very interesting collection of arrow heads, found out at the Columbia River, had brought many arrow heads and spears to school, but we hadn't had time to gather definite information about them. Since we could find so little material on the making of weapons, we wrote a letter to Professor Fish of the Normal School and asked him if he would come over and tell us what he knew.

We received the following answer from him.

My dear friends of the Third Grade:

Today I received your very kind note and I am happy to say that at any time the first of the week I shall gladly speak to your room between ten and eleven o'clock.

I will speak on the topics you mentioned and I will be all smiles to be with you again.

Your friend,

H. C. FISH.

Mr. Fish told us about bows and arrows, tomahawks, knives, war clubs, striking clubs and spears. He explained how the Indians used green or raw leather to tie the arrow heads to the shafts. As the leather shrank, the arrow heads were kept firmly in place. The same method was used for fastening handles on stone hammers.

He also explained the games that Indian boys and girls played long ago. These included horse racing, canoe racing, foot racing, stick shuffling, target and spear shooting, swimming, wrestling, ball games, hockey, games of war, ice games, coasting, and many others.

He concluded his talk by telling three Indian legends, "How Animal God Got Ahead of Coyote," "Why the Cricket Sings All Winter," and "Where Fire Came From."

A most unusual collection of Indian relics was loaned to us by Rev. and Mrs. R. A. Hansen. These were exhibited in our display cabinets so that other children in the building could enjoy them, too. The collection of tools was very complete and Mr. Hansen gave us much valuable information about them. He showed us stone hammers, hatchets, clubs, chisels, knives, scalping knives, and scrapers. He explained the difference between war and game points. There were awls, needles, arrow points, and fish hooks made of bone. Besides these things, Mr. Hansen exhibited beautiful beaded work, baskets, three types of corn crushers, and many other things.

## WORK

We realized what a great deal of time and hard work it required for the Indians to make tools and weapons. One child said that he had heard that the Indians were lazy and made the women do all the work. So we investigated and found that the men were not lazy but their work took them away from the camp so much of the time that consequently the work around the camp fell to the women. We found that the work of the men included: hunting, fishing, trapping, making weapons, making tools, fighting, and breaking horses. The work of the women was: caring for children, setting up tepees, working around the tepees, gathering wood, preparing foods, making clothing, tanning and dressing skins and making pottery.

Children from the time they were young had definite work to do in helping their parents.

At the present time Indian men work on farms, pick hops, potatoes and fruit, trap game, fish, break and round-up horses. Many Indians on reservations rent their land and live on the rental money. The Indians are not a hard working race of people.

## TRAVEL

Someone raised the question "How did the Indians get to Ellensburg for the Rodeo?" We found that they came in automobiles, trucks, trains, stages, and on horseback. In study-

ing early day Indian travel, we found the topic so interesting that we made a very attractive booklet on Indian travel. It included the following chapters: Travel on Foot, Use of Tump Lines for Carrying Bundles on Backs, Dog Packs, Travel on Horseback, Drags, Bark Canoes, Skin Canoes, Coracles (tub-like boats), Dug-Outs, Rafts of Poles, and Tule Rafts.

The children made pictures to illustrate each type of travel.

### SIGNALS, SIGNS, AND PICTOGRAPH STORIES

One of the most interesting of all of the topics was that of signals and sign making. The Indians made signs by cutting notches in trees, bending and breaking twigs, and piling up rocks to show directions of trails. They also signalled with smoke by raising and lowering a blanket at intervals over a fire, thus making smoke columns. The children had seen smoke signals used in the night pageant of the Rodeo.

The discussion of sending messages brought us to the subject of languages. We found that each tribe had its own language. That made it impossible for different tribes to understand each other unless they used a sign language. William Tomkin's book on Sign Language and Ernest Thompson Seton's Book of Woodcraft proved to be very helpful. We found that we use many signs today that the Indians used years and years ago.

Since the Indians had no alphabet they used designs for expressing ideas. Events were recorded by painting on skins and tepees or chiseling on rocks. These were called pictograph stories. Events were also recorded on pottery, in blankets, head dresses, clothing, and baskets. In this way stories were handed down from one generation to the other. The children used the pictograph idea in an original story which they painted on their tanned rabbit skin.

We finished our study of Indians by arranging an exhibit of the things that we made during our study. Children from the Edison and Lincoln schools were invited to see this exhibit. It included the following: buckskin dress, dressed hide, tanned hide on which was painted the pictograph story, tepee, pottery, panel of Indian design, book marks using Indian designs, posters showing signalling by means of fire, smoke, trees, and rocks, booklet on Indian travel, large book which the children

made and illustrated, including all the topics discussed in this unit, and kodak pictures which we had taken of Annie Moore, Cecilia and Mary Moses. Besides these things, we had on exhibit many things that had been loaned to us, such as Annie Moore's buckskin dress, Indian suit-case or parfleche, made of rawhide, beaded bags and belts, baskets of many kinds, moc-casins, weapons, tools, and pottery.

### OUTLINE OF SUBJECT MATTER

#### I. CLOTHING.

1. Present day dress.
2. Early Indians.
  - a. Inland.
  - b. Coast.
  - c. Hopi.
  - d. Navajos.
3. Ceremonial dress.

#### II. DESIGNS.

1. Meaning.
2. Materials used; fringe, beads, porcupine quills, sea shells, teeth, bird beaks.

#### III. MUSICAL INSTRUMENTS.

1. Tom tom.
2. Flageolet.
3. Drums.
4. Notched sticks.
5. Whistles.
6. Rattles.
7. Bells.

#### IV. HOMES.

1. Present day homes, similar to ours.
2. Inland tribes.
  - a. Tepees.
  - b. Dug outs.
  - c. Brush houses.
  - d. Hogans.
  - e. Pueblos.
3. Coast tribes.
  - a. Long houses made of cedar.

#### V. MEANINGS OF INDIAN WORDS.

1. Tillicum.
2. Muck-a-muck.
3. Vamoose.
4. Potlach.
5. Ichew.
6. Mashema.

#### VI. EARLY KITTITAS INDIANS.

1. Cecilia.
2. Mary Moses.
3. Chief Moses.
4. Chief Owhi.
5. Chief Shooshooskin.

#### VII. FOOD.

1. Present day Indians eat practically the same foods as we do.
2. Indians of long ago.
  - a. Inland Indians.
    1. Game (chief food).
    2. Fish.
    3. Berries.
    4. Camas.
    5. Wild Vegetables.
    6. Roots.
    7. Fruits.
    8. Nuts.
    9. Seeds.
  - b. Coast Indians.
    1. Fish (chief food).
    2. Shell fish.
    3. Game.
    4. Berries.
    5. Roots.
    6. Bark.
    7. Seeds.
    8. Nuts.
    9. Wild vegetables.
    10. Seaweeds.
    11. Bird's eggs.
    12. Fish eggs.

## VIII. WAYS OF MAKING FIRE.

- |                     |                 |
|---------------------|-----------------|
| 1. Rubbing sticks.  | 4. Strap drill. |
| 2. Striking sticks. | 5. Bow drill.   |
| 3. Palm drill.      |                 |

## IX. WAYS OF COOKING.

1. Roasting over open fire.
2. Food cooked in baskets in which hot rocks were placed to heat water.
3. Food steamed in a pit.
4. Roasting or baking food in wood ashes.

## X. POTTERY.

1. Made of clay.
2. Designed.
3. Baked.

## XI. WEAPONS.

- |                     |                    |
|---------------------|--------------------|
| 1. Bows and arrows. | 4. War clubs.      |
| 2. Tomahawks.       | 5. Striking clubs. |
| 3. Knives.          | 6. Spears.         |

## XII. TOOLS.

1. Celts used as hatchets, chisels, knives, scrapers.
2. Hammers.
3. Bone tools, awls, needles, arrow points, fish hooks.
4. Teeth used as chisels and knives.
5. Shells used as scrapers, spoons, cups and bowls.
6. Wooden hammers and wedges.

## XIII. WORK.

1. Present day conditions of work.
2. Indians of long ago.
  - a. Men.
 

1. Hunting.	4. Making weapons and tools.
2. Fishing.	5. Fighting.
3. Trapping.	6. Breaking horses.
  - b. Women.
 

1. Caring for children.	5. Preparing food.
2. Setting up tepees.	6. Making clothing.
3. Working around tepees.	7. Tanning and dressing skins.
4. Gathering wood.	8. Making pottery.

## XIV. TRAVEL.

- |   |                |              |               |              |                 |                |                 |                |
|---|----------------|--------------|---------------|--------------|-----------------|----------------|-----------------|----------------|
| 1. Nowadays.  |                |              |               |              |                 |                |                 |                |
| 2. Early days. <table border="0"> <tr> <td>a. Foot.</td> <td>e. Coracles.</td> </tr> <tr> <td>b. Horseback.</td> <td>f. Dug outs.</td> </tr> <tr> <td>c. Skin canoes.</td> <td>g. Pole rafts.</td> </tr> <tr> <td>d. Bark canoes.</td> <td>h. Tule rafts.</td> </tr> </table> | a. Foot.       | e. Coracles. | b. Horseback. | f. Dug outs. | c. Skin canoes. | g. Pole rafts. | d. Bark canoes. | h. Tule rafts. |
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| c. Skin canoes.   | g. Pole rafts. |              |               |              |                 |                |                 |                |
| d. Bark canoes.   | h. Tule rafts. |              |               |              |                 |                |                 |                |

## XV. SIGNALS.

- |  |   |                        |          |                      |                      |  |  |
|--|---|------------------------|----------|----------------------|----------------------|--|--|
| 1. Present time. <table border="0"> <tr> <td>a. Telephone, telegraph, radio, and mail.</td> <td></td> </tr> </table>   | a. Telephone, telegraph, radio, and mail. |                        |          |                      |                      |  |  |
| a. Telephone, telegraph, radio, and mail.  |   |                        |          |                      |                      |  |  |
| 2. Long ago. <table border="0"> <tr> <td>a. Smoke.</td> <td>d. Placement of rocks.</td> </tr> <tr> <td>b. Fire.</td> <td>e. Beating of drums.</td> </tr> <tr> <td>c. Notches in trees.</td> <td></td> </tr> </table> | a. Smoke.                                 | d. Placement of rocks. | b. Fire. | e. Beating of drums. | c. Notches in trees. |  |  |
| a. Smoke.  | d. Placement of rocks.                    |                        |          |                      |                      |  |  |
| b. Fire.   | e. Beating of drums.                      |                        |          |                      |                      |  |  |
| c. Notches in trees.   |   |                        |          |                      |                      |  |  |

## XVI. LANGUAGE.

1. Each tribe spoke own language.
2. Sign language necessary to understand each other.

**XVII. RECORDING EVENTS.**

1. Pictograph stories.
2. Designs on baskets, pottery, in blankets.
3. Legends told from one generation to the other.

**RELATED LEARNINGS AND OUTCOMES**

**I. READING.**

Stories listed in discussion, all Indian material in second and third grade readers, books from the Training School Library, Indian books from the Public Library.

**II. LANGUAGE.**

1. Written Language: Letters, invitations, thank-you notes, Christmas cards, articles for school newspaper "Edison News," group stories for two Indian booklets, labels for exhibit.
2. Oral Language: Learned to express ideas in clear, well organized form, give reports on information found, give talks at assemblies and explain exhibits, express ideas through dramatization.
3. Literature: An appreciation of Indian literature as revealed in their legends and myths.

**III. ARITHMETIC.**

Found the cost of materials used for: tepee; preparing skins, alum, tannis acid, olive oil; rabbit used in stew; beads used in decorating buckskin dress and beaded bag.

**IV. SPELLING.**

Learned the words which were frequently used in writing group stories.

**V. MUSIC.**

Toby and Nancy—local pioneer songs.

"Indian Lullaby"—Music Hour Book I, Silver Burdett Co.

"Pappoose"—Music Hour Book I, Silver Burdett Co.

"The Sun Worshippers," "Zuni Lullaby"—Twice 55 Community Songs—C. C. Burchard Co.

Victor Records—

No. 20043, "Chant of the Eagle Dance" and "Chant of Snake Dance."

No. 18418, "Acoah" and "Her Blanket."

No. 20042, "From an Indian Lodge" and "Love Song."

No. 20983, "Sunrise Call" and "Lover's Wooing."

**VI. ART.**

1. Indian design; decorated buckskin dress, beaded design on buckskin bag, made panel for room, made pictograph story on rabbit skin, designed covers for Indian books, painted decorations on tepee.
2. Made posters showing signalling by fire, smoke, trees, rocks.
3. Made illustrations for own books, "Indian Life" and "Indian Travel."
4. Made clay bowls, designed and painted them.

**VII. GENERALIZATIONS.**

1. Indian customs, habits, and modes of living are a result of their environment, consequently, tribes differ.
2. Many of our present day customs, designs, signs, etc., are an outgrowth of Indian life.
3. In primitive life, Indians were entirely dependent on nature.
4. The Indians have had to make many adjustments in follow-

- ing the white man's way of living since the resources of primitive life have been taken away from them.
5. Indians need the government to help support them since they have been deprived of natural ways of living. Most Indians now live on reservations.
  6. Myths and legends explain many Indian beliefs and customs.
  7. Many well-known local Indians have contributed to the history of the region.

#### VIII. SOCIAL LEARNINGS.

Most of the children have learned to be thoughtful of others in working together, to take active part in group discussion, to wait their turn in class discussion, to help in planning activities with group, to help in carrying out plans, to find their own accord information and materials that are useful in class activities, to plan work so they know what to do with extra time.

#### IX. RELATED ACTIVITIES.

1. We secured interesting Indian articles from the Toppenish Indian Reservation. These we arranged as an exhibit to share with the children in our local schools.
2. An Indian Assembly was given for the Normal School students.
3. We explained our Indian activity to the parents at our annual "Open House."
4. We entertained the room mothers at an Indian program at which we explained our Indian study. The program included a group of Indian songs, an original dramatization, and an exhibit of Indian articles which we had made. Cecilia, the local Indian woman, was a special guest at this program.

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## CHINA

Francis Caroline White, Supervising Room Teacher

The teacher consciously guided the attention of the children to China to give them an idea of how people live in other latitudes. She first read the stories of "Liang and Lo" and "Ching-Li and the Dragons." The children accepted these stories with evident interest and enjoyment, but an inquiring attitude for which the teacher had hoped did not develop. Pictures from the National Geographic Magazine were shown to the class and this led to a few questions as to how the Chinese children dress. One child was given pictures that showed how rich and poor children and coolies dress. This pupil was later allowed to show the pictures and to tell the class what she had found. At this time other children began bringing articles on China and the Chinese. Because the first type of approach did not stimulate much of a questioning attitude, another approach was attempted. The world map was presented and China was compared in latitude with North America and with Africa. The class had previously studied the Congo region. From this comparison, came the conclusion that, because of its extent, China has a variety of climates and products. Also the questions were asked, "Do the Chinese have the same seasons as we do?" "What time is it in China right now?"

To explain the seasons, the teacher used a flash light and a globe, showing that both the United States and China have summer when the direct rays of the sun fall north of the equator. The difference in time was explained by means of the globe and light. Facts were also given about monsoons comparing them to sea breezes with which some of the children were familiar.

Maps in the text book were then examined. From these, the children discussed and named many facts about China. Then they used small outline maps, putting in the main rivers, cities, and the five provinces. They made similar locations on a large outline map on the board. They were also given outline maps on which the United States was superimposed upon China. In this way they compared the size and the populations of these countries.

The teacher had visited China, so she told of her experiences in the cities of Peiping, Nanking, and Shanghai, and also what the surrounding country looked like. Then she asked the children if there were other things they would like to know. They proposed the following questions:

Do they have rabbits in China? Do they have pigs in China? Do they have hens in China? Are they like ours? How many eggs do they have in China? Do they have dogs and cats? Do they raise lambs? Do crops grow faster in the South? Where do they have floods in China?

Many of the questions referred to animals, possibly because the previous unit had been about animals in the jungles of Africa.

The class periods for the next few days were spent in looking for answers to these questions and in giving simple reports. The class used the text first, learning the use of the index, the table of contents, and how to read paragraph headings to find answers to questions. As they were reading to answer the above questions, they discovered material on silk worms. Time was then taken to make quite an extensive study of silk culture in China.

Many of the children's questions were not answered by the text, so library books were used. To answer some questions, the teacher consulted the *World's Almanac* and the *Statesman's Yearbook*. As yet the children were not skillful enough in using references to get material from these sources independently.

The study of the animals of China showed the scarcity of meat and led to the study of other Chinese food. As the work progressed, these are some of the significant questions that were asked by the children and used as a basis for study.

Do they make paper out of bamboo? How long does it take to travel from north to south in China? Do they go to school in China? What are the schools in China like? Is North China different from South China? What are their dishes like? What are their houses like? Are there many people in Tibet? What are their dresses like? Did you see the Great Wall? What was it like?

The procedure in answering these questions was about the same as before. Sometimes the teacher would tell things she had seen in China, at other times the children gave reports.

Because it seemed desirable that the children get more about the customs of China than was discovered through the answering of the questions which had been proposed by them, and also, because the teacher wanted to find out if the story "Young Fu of the Upper Yangste" was above their grade level, she told and read parts of it to the class at different periods. Some parts were too advanced, but the parts with conversation gripped their attention.

When it came time for the Festival of Nations, an all-school festival, the children considered what they could contribute. They finally decided on a booth to sell Chinese linens and a few other things suggestive of China, such as sampans, toy pagodas, Jasmine tea, and almond cookies. Beautiful, silk embroidered, Chinese screens were borrowed from the local Chinese cafe to use as a background for the booth. The children also decided upon a Thieves' Market and constructed, with student-teacher help, a ten-foot city wall out of brown wrapping paper. The adobe bricks were drawn with charcoal. On the night of the festival, some of the children squatted on gunny sacks, unrolled their bundles, and sold their wares after the manner of the Chinese.

The children also suggested that they dramatize one of the Chinese stories which they knew. Because they liked "Ching-Li and the Dragons" so much, they thought of that but many difficulties of presentation arose. Ching-Li is riding a dragon much of the time, also, it would take so few characters and the staging would be difficult. "Liang and Lo" was suggested, but the question as how to show the water buffalo and the dragon arose. This was finally given up. Then the children began to try out parts of "Young Fu" which had been read and told to them. After trying out a part which they thought could be easily worked out, they decided to use this for the dramatization.

In the meantime, the teacher told them what she knew of the Chinese theater and about the property man in the play "The Willow Plate." Also, how, in that play, snow and a man on horseback were represented. Finally with the teacher's help they adapted these ideas to the story of Young Fu.

The procedure, in general, was to have the teacher read a part, then the children would try dramatizing it. Those not

trying out for parts would criticize and suggest. They decided to call the play "How Young Fu Paid His Debt."

## DRAMATIZATION

### "HOW YOUNG FU PAID HIS DEBT"

**PROPERTY MAN** (dressed in black with hood and mittens): Most honorable audience, this humble person wishes to thank you for coming to our play. Miserable worms that we are, we will try to win your approval by giving a play in the Chinese manner. Much that we do in this play may seem strange because the Chinese stage hasn't changed much from long ago. We made up our play from the story called "Young Fu of the Upper Yangste." Young Fu owes a debt that he cannot pay and as New Year's day draws near he worries about it, for at that season in China all debts are supposed to be paid. To get out of paying his debts he goes away from Chungking across the Yangste to the home of a cousin. In this play, we shall show with your permission, how he gets the money to pay. Forgive this humble person, for intruding so long upon your welcome. Now, according to Chinese custom, when I draw down my hood and put on my mittens I become invisible.

**FU BE BE** (enters and bows three times): Gentle Listeners, I am Fu Be Be, the respected mother of Young Fu. (Goes to table and sits.)

**YOUNG FU** (enters and bows three times): By your leave, I am Young Fu. (Walks across stage and shows his mother the watch.) Honorable Mother, see this wonderful watch that I just got at the jewelers.

**FU BE BE**: What! A new watch! (Holds up hands in horror) Where will you get the money to buy that? How in the world will you ever pay for it?

**YOUNG FU**: I did pay. I just signed a slip for five Mex, (showing slip) see!

**FU BE BE**: We shall have to beg on the streets or starve. I shall have no coffin for a decent burial. (Tears)

**YOUNG FU**: Never mind, honorable Mother, I'll find a way to pay for it.

**FU BE BE**: All my life I've wanted to save enough money for a coffin. I have dreamed of having it in the house and using it for a table until I could occupy it in state. Stupid boy! What do we need of a watch? (shrilly) When I wish to know the hour I can look into the eyes of my neighbor's cat and find out.

**YOUNG FU** (blowing out candle): See here, mother. See how the hands shine in the dark. Hsui says they are illuminated. He said I was smart and intelligent to notice this watch.

**FU BE BE**: It is some foreign devil's spirit come to live with us and disgrace my old age. What have I done to have a son so brainless!

**PROPERTY MAN** (Property man takes characters off the stage and moves off the table. He brings in a strip of cloth for Yangtse river, also a small boat. He places two chairs together for the mountains. After doing this he takes off hood and mittens. The boatman enters here and sits by the boat.)

You have seen how Fu Be Be feels about the matter of the watch.

Now, Young Fu, in trying to escape his debt, crosses the Yangtse and passes over the hills to the home of his cousin. Behold! In this strip of cloth the Yangtse river and in those chairs the mountains beyond. Still further you see the door representing the home of his cousin. (Pulls on hood and mittens and retires)

YOUNG FU: Hsui, Hsui, must be paid. One day remains before New Years when debts as well as clothing must be new. Hsui will not stop until he finds me and then! Why did I buy that watch? He flattered me. He told me I was intelligent and travelled. He got the best of me! What shall I do? I have it—I'll go across the Yangtse to my cousins. There Hsui will never find me. (Goes to river. Sees the boatman who entered when stage was arranged.)

Hello, Mr. Boatman, may I help you load vegetables for a trip across the river? (Helps boatman.) Thank you. Good-bye and good luck! (He steps upon chairs and looks around) How much colder it is in these hills! (shivers) Oh, how I wish I could be at home on New Year's Day. All this comes from buying something I could not pay for. (Sees house) That must be the house over there. I'll see if they are at home. (Knocks)

FARMER: Who is there?

YOUNG FU: It is I, Young Fu, the son of your father's oldest sister.

FARMER: What proof have I that it is you?

YOUNG FU: Don't you remember your aunt Fu Be Be? Don't you recall that her husband was a farmer in these parts and at his death she went to Chungking. She had one child, Young Fu, and I am that one. I have come to visit you from Chungking.

FARMER: Why are you here at this time of the night? (Family come out and gape at him)

YOUNG FU: I came here to visit you over New Year's Day because I owe a debt of \$5.00 Mex.

FARMER: Why do you owe this?

YOUNG FU: I bought a watch from Hsui. He flattered me and I signed a piece of paper promising to pay. I couldn't get the money by New Year's so I was afraid to stay in the city.

GRANDMOTHER: What a disgrace on your poor old mother's head! What a stupid boy!

FARMER: I suppose you may as well stay now that you are here. Come on in.

PROPERTY MAN: You have seen what a chiding Young Fu gets from the farmer. He almost wishes he had stayed in the hills all night. However, they finally let him stay. Morning will soon be here. (Property Man throws up pieces of paper for snow by the door of the farmer's house.)

FARMER (comes out rubbing eyes): Come quickly. Come quickly. (Young Fu and others come out. Property man continues to throw snow.)

YOUNG FU: Feathers! Feathers!

FARMER: No, snow.

YOUNG FU: So this is truly snow. I have never seen any before.

FARMER: I have seen it only twice. Once when I was a boy and again

this morning. It is strange. (Young Fu catches up some snow and shows to women.)

GRANDMOTHER: In my youth they would have called this a good omen for the New Year. It is the wintry breath of the dragon.

YOUNG FU (looking at his hand): It is gone, grandmother.

GRANDMOTHER: It is the heat in your hand. With the coming of spring heat, winter dies. So it is with this.

YOUNG FU: Dragon's Breath; Dragon's Breath! Good Fortune! I have an idea! Have you any large basket you would lend me?

FARMER: Perhaps. Why do you want it?

YOUNG FU: I wish to fill it with snow to take to Chungking.

FARMER: Why trouble to take it to Chungking. (Farmer goes out and returns with basket.)

YOUNG FU: Grandmother calls it the breath of the dragon and says it will bring good luck. Once there I shall sell it to pay my debt. I must be going. Thank you very much for my lodging. Good luck to you for the New Year! Good-bye! (Fills basket.) (Goes over hills to river.)

BOATMAN: Ten coppers for a ride to-day.

YOUNG FU: I have something better than coppers. It's Dragon's Breath! It's good fortune for the New Year. (Boatman takes some snow and lays it on floor of boat.)

YOUNG FU: Good-bye. Good fortune for the New Year.

PROPERTY MAN (removing hood and mittens): Honorable Audience, the next scene will be a street scene in Chungking, and Young Fu will show how he gets money to pay his debt.

(Property man clears stage.)

YOUNG FU: (crying as loud as possible): Dragon's Breath! Dragon's Breath!

CHINAMAN: What is it? What is it?

YOUNG FU: Come and get some. Good fortune for the New Year. (Customer buys.)

SECOND CHINAMAN: What is its use?

YOUNG FU: Hold but a little in your hand and good fortune will follow you all the year. Only five coppers for Fortune's smile! (People reach for it.)

YOUNG FU: Here, Small Tamer of Tigers, take it in your hand! It burns thee? It is the breath of the dragon! (Others come along the street.) Wee sister, do not fear! It is good for thee to have. It will shield thee from harm. (Young Fu slaps his hands together) (Others come by and buy) (Finally Young Fu sits down to count his money.)

YOUNG FU (counting): One, two, three dollars Mex and forty coppers over! Oh, joy, I can pay my debt and have some coppers left. (Starts to go off stage.)

That's good fortune for me for the New Year.

(END)

Dramatized from YOUNG FU OF THE UPPER YANGTZE  
By Elizabeth Foreman Lewis.

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is hereby acknowledged.

If learning is doing, the children got a more vivid picture of Chinese life by having given this play. They wore costumes similar to those of the Chinese, they bowed and spoke of themselves in the same deprecating manner as the Chinese do, they entered into the experience of showing how prone is the crowd to superstition and how easily it is fooled, and they learned many Chinese customs.

This play was used as a summary for the unit instead of the more formal organization of food, clothing, and shelter. A quiz was given that covered some of the main facts of the unit. The results showed that the children had acquired the main primary learnings.

The unit included important facts concerning the dress and customs of the Chinese, their work, and the principal products of their country. The Great Wall proved to be a fascinating topic. Because most of these facts are found in geography books, a complete outline of these learnings is not included in this publication. The facts included in the summary on "Homes" indicate how the reference reading was enriched by the teacher's accounts of observations made on a recent tour of China.

## HOMES

**Homes of the Poor.** Hovel with one door, no windows, openings in roof, walls of clay mud though sometimes of wood, floor of earth pounded hard, filthy, no ventilation, eating and sleeping done in one room, goats and pigs and chickens in same room. Furniture consists of small table, a few pots, a little charcoal stove, and a shelf or two.

**Homes of the Middle Class.** Houses sometimes joined to one another, one-story high, built of wood, sloping roofs made of thatch or tile, with or without court. In farmer's home oiled paper instead of glass used for windows, heated air carried under sleeping platform called kang, furniture very simple, a loom and spinning wheel in the corner, household articles hanging from ceiling, a rude bench or two.

**Homes of the Well-to-do.** Entered by passing through an opening in wall to a small court; well, flowers, trees in the court, rooms built around court; walls of bluish bricks, adorned with paintings, tapestry; floors of colored tiles, skins of animals or matting on floors; furniture, ebony, ivory, marble, bamboo

mahogany, very ornamented, very stiff and formal; beds, hung with curtains, hard; large hall where coffins are kept and tablets of family history.

The entire home unit of the wealthy includes house for sleeping, living and eating quarters, a schoolroom, a theater, a chapel, a garden, and a kitchen god.

### **CUSTOMS OF THE CHINESE THAT ARE DIFFERENT FROM OURS**

Debts are paid on New Year's.

The system of "squeeze" is very prevalent in business and politics.

Coffins are bought before death.

Parents and ancestors are much respected.

Women and girls are not so highly regarded as men.

No strong central government.

Many war lords control provinces.

System of guilds governs trade.

Tea drinking is universal.

Thieves market in Peiping is like a rummage sale held in one of the outer streets of the city.

Poor people are very superstitious.

Marriages are arranged by parents.

Shake their own hands.

In bowing (kotowing) bend almost to ground.

Begin their books at the back.

Use chopsticks instead of forks.

Modes of travel are rickshas and wheelbarrows.

Queer kinds of food, birds nest soup, curries.

Wash cloths used everywhere, in theaters trains and temples during hot weather to wipe off perspiration.

Chinese baby strapped to mother's back.

Men and boys fly kites.

### **SPECIAL VOCABULARY**

In dealing with a particular subject one develops a vocabulary peculiar to the unit. So it was with this study. The children became familiar with the meaning of the following words by seeing them in their reference reading and hearing them in reports, stories, and discussions: paddy field, sampan, junk, ricksha, coolie, mandarin, queue, kang, sedan chair, pidgin



English, chopsticks, lotus flower, bandit, monsoon, water buffalo, dragon, incense, debts, kaoliang, millet, pagoda, Chungking, Peiping, Shanghai, Nanking, Yangtse, Tibet, Manchuria, Mongolia, Yellow.

In addition to the special vocabulary learned, the children became interested in Chinese writing. They studied a few of the word symbols used by the Chinese. When signs were made to advertise articles to be sold in the Chinese bazaar at the Festival of Nations, they enlisted the help of some Chinese friends to make the appropriate signs.



#### RELATED LEARNINGS AND OUTCOMES

##### FINE AND INDUSTRIAL ARTS.

- Drawing of temples, pagodas, dragons in regular art period.
- Undirected painting of temples, pagodas, junks, and dragons by use of calcimine paints.
- Undirected copying of birds from Chinese screens.
- Decoration of wall for 'Thieves' Market.
- Making Chinese characters in signs for the bazaar.
- Making of junk for stage (two boys did this).

##### MUSIC.

- Singing of Chinese songs.

##### HISTORY.

- Story of Marco Polo.
- Story of Great Wall.

**READING.**

- Use of index, table of contents, paragraph headings.
- Reading to answer definite questions.
- Reading of stories and reference books mentioned in bibliography.

**LANGUAGE.**

- Practice in speaking before group.
- Practice in oral composition.
- Practice in judging, criticizing a dramatization.
- Writing to Chinese firm for materials for bazaar.

**GEOGRAPHY**

Reading of maps and globe, finding position of China on world maps, filling in outline maps, reading legend on physical map to find out which part of China would be most likely to have the most people. Finding out why Chinese eat more vegetables and rice than meat. Getting a vivid picture of Chinese life because of many pictures used, the costumes used in dramatization and because of the fact that the children themselves entered into this experience through their play. Comparing population of China with United States. Comparing size of the United States and China by superimposing one map upon the other.

From the study the children should be sympathetic to Chinese life. They were made to realize the struggle of the poor in "Young Fu" and in "Lin Foo and Lin Ching." Through the pictures and stories of the crowded conditions of the cities, the beggars, the life on houseboats, and the size of the farms, the children became conscious of the struggle made by the Chinese in adapting themselves to their environment. They were able to relate poverty to density of population.

**GENERALIZATIONS**

1. When the land mass becomes hotter than the ocean, in-blowing breezes (monsoons) are set up. This occurs in China every summer.
2. Summer monsoons are conducive to the growth of crops because they bring moisture from the ocean. Hence, in China, two crops can be raised in one season.
3. Warm climate with plenty of rainfall contribute to a large population.
4. Warm wet lowlands are suitable to the growing of rice.
5. Warm wet hillsides are suitable to the growing of tea.
6. As population increases, farms decrease in size.
7. When farms are very small cattle and sheep cannot be raised.
8. The scarcity of timber causes people to build with material at hand. (In China the material is clay or adobe brick).
9. A large population, with the food supply limited, causes much poverty.
10. The Chinese religion and family traditions have caused population to increase rapidly.
11. Ancestor worship is a contributing factor in causing a country to be slow to change customs.

Some of the most important outcomes of our unit were the concomitant learnings. The children learned to cooperate and plan together, all working to one common end. They had practice in learning how to accept and give criticism. They gained some independence in looking up material for themselves. They have a more inquiring attitude and appear to like geography better as a result of this unit. Other direct learnings included in the unit were, a growing interest in China, as shown by their wanting to finish reading "Young Fu" and other books on China,

a desire to re-read stories that the teacher had read to them, the ability to draw and paint, on their own initiative, birds from Chinese screens, and very evident enjoyment in the dramatization.

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## ASTRONOMY

Tennie Johanson, Supervising Room Teacher

The children became interested in astronomy when they were told how and why the light from the star, Arcturus, was used each evening to start the illumination at the Century of Progress Exposition in Chicago. The questions which grew out of this discussion started an astronomy unit that continued with varying degrees of interest and intensity throughout the remainder of the year.

Below are listed a few of the questions that were asked during the early part of this unit. How far are stars from us? What are stars made of? What are falling stars? Why aren't stars as big as the sun? Why don't stars come out at the same time that the sun does? What is the moon? What makes the moon change its shape? What makes stars in the shape of a dipper? What is the Milky Way? What makes the sun so hot? Further questions were asked as the children read material on astronomy which they brought to school in the form of books, magazines, calendars, almanacs, and newspapers.

At first no attempt was made to organize the questions because definite organization might have limited their scope. However, the children soon found that in order to satisfy their curiosity they would have to take up the study of one topic at a time.

The question, "Is it true that there are people on Mars?" led to the study of the solar system. The teacher told the children some facts about this planet which provided a basis for judging the answer for themselves. Following the discussion of Mars, questions were asked about planets. What are planets? Where did they come from? Are they all alike? How many are there? What keeps them going around the sun? What is the difference between a planet and a star?

The children showed their interest by asking these questions, but they made little effort to find much information on any one subject until one of the boys asked if the class might read about Jupiter, "because," he said, "I've found an interesting story about it." The members of the class seemed to like this idea, but it was found that there were not enough books

for all. From this lack of books, there evolved the organization of groups for reporting information to the class. One of the children made the suggestion that some of the group might like to read about Jupiter and report to the others what they had found while other children might like to report on other planets. Everyone agreed that this procedure was advisable, and steps were immediately taken to follow it. The teacher wrote the names of the planets on the board, and committees were arranged, on a voluntary basis, to gather material and report on each planet.

From this time on there were no assignments made by the teacher. During the free reading period or at home, the children read to find the answers to their own questions and to gather material for reports. These reports were given during the daily twenty minute science period which was never long enough for sharing all the information secured from books, magazines, newspapers, personal observations, and the radio.

After we had learned about the planets we gathered information about the sun, our moon, and the asteroids. The following outline gives some of the facts that were found and discussed by the class during our study of the solar system.

This material has been compiled from many sources; books, pamphlets, current newspapers, and magazines.

## THE SOLAR SYSTEM

### THE SUN

#### I. What It Is.

1. A yellow star of the third magnitude.
2. A ball of hot gas with a surface temperature of 11,000 degrees Fahrenheit.
3. Contains the same elements of which the earth is made.  
Note: Astronomers at Princeton University discovered, with the aid of a spectroscope that there is sulphur in the sun.—News item, February, 1934.

#### II. Its Size.

1. 864,000 miles in diameter or about one hundred and ten times the earth's diameter.
2. More than a million times larger than the earth.
3. Surface gravity twenty-eight times that of earth's surface. Ordinary man would weigh two tons if he were on the sun.

#### III. Distance from the Earth.

1. 93,000,000 miles.
2. About eight minutes required for light from the sun, traveling at the rate of 186,000 miles a second, to reach us.

#### IV. Sun Spots.

1. Dark places on the sun, first discovered by Galileo.
2. Vary in size, some being about six times the diameter of the earth.

3. Scientists think sun spots might be the cooling masses of whirling gas that have been thrown up from the interior part of the sun.
4. Spots help astronomers find how fast the sun rotates—twenty-five days near the center and thirty days near the poles. (Since the sun is gaseous, all parts do not rotate at the same rate).  
Note: Dr. Albert Noden, French Academy of Sciences in Paris, gives twenty-seven days as the time for the sun's rotation.
5. Increase in sunspots cause.
  - a. Irregularity in needle of compass.
  - b. Difficulty in wire and radio communication.
  - c. More frequent displays of northern lights.
  - d. Cooler weather. A newspaper article of February 16, 1934, quoting Dr. Seth B. Nicholson at the Mt. Wilson Observatory, stated that cooler weather may be expected.
  - e. Storms on the earth.
  - f. Greater fecundity on earth, theory printed in the *Pathfinder*. Invisible sunspots may cause disturbances on earth, theory held by Dr. Albert Noden after observations made from June to September, 1933.

V. The sun gives us light, warmth, color, and food.

VI. The sun gives us health, has therapeutic value.

VII. Eclipse of the sun.

1. Total eclipse occurs when moon completely hides sun from view.
2. Appearance of eclipse depends upon position of person observing it.
3. Stories about superstitions connected with eclipse can be found in "The Story of Earth and Sky," Washburne. See bibliography.
4. The natives of the South Sea islands from which astronomers viewed the eclipse in February, 1934, were prepared beforehand for the event. They viewed it, according to newspaper stories, through smoked glasses and clapped when it was over.

## THE MOON

I. Interesting facts about the moon.

- a. A dead body reflecting the light of the sun.
- b. The earth's satellite.
- c. 240,000 miles from the earth.
- d. One fiftieth the size of the earth. The weight of an object on the moon would be less than one-fifth of what it weighs on the earth.
- e. Day and night on the moon.
  1. Only one side of the moon can be seen from the earth.
  2. Each day is fourteen of our days long.
  3. Day is extremely hot and night is extremely cold.
- f. Many craters on its surface.
- g. No air or water on moon.

II. Phases of the Moon.

- a. Caused by moon's position with respect to the sun.
- b. When moon is between us and the sun it is invisible because dark side is turned toward us.
- c. Gradually moves from this position until opposite the sun. Then it is called full moon.
- d. Names and times of phases are given on calendars and in almanacs.

The tides and eclipses of the moon were similarly studied.

## PLANETS

I. Theories on how the planets were formed.

1. Might be pieces of the sun that were pulled off when another star came too close.

2. Might be pieces from an explosion of our sun.
3. Might have been built up by a snowball-like process with two atoms first adhering to each other and more and more joining the pile. The last is the theory of Professor Dinsmore Alter of the University of Kansas.

## II. Planets in general.

1. Made of the same material as the sun.
2. Some are more or less solid while some are still in the gaseous state.
3. They do not shine by their own light, but they reflect the light of the sun.
4. Ways to tell planets from stars.
  - a. Planets do not seem to twinkle as stars do, but shine with a steady light.
  - b. They move, following the sun's path, from one group of stars to another.

Note: "The Nature Magazine" publishes a map of the heavens every month which shows in which constellations different planets may be found.

## III. Planets in the order of their distance from the sun.

1. Mercury.
  - a. The planet closest to the sun, being 36,000,000 miles from it.
  - b. A little larger than our moon.
  - c. Requires 88 of our days to go around the sun.
  - d. Day and year are the same length because it rotates on its axis only once in 88 days.
  - e. Side that is turned toward the sun is terrifically hot while the other side is very, very cold.
  - f. Can be seen at times just before sunrise or just after sunset. Then it is called the morning and evening star.
  - g. Greeks called it "Stealer of the Heat and Light" because it is so near the sun.
2. Venus.
  - a. Very beautiful planet—was named after the goddess of love and beauty.
  - b. Our evening star most of the year.
  - c. Sixth biggest planet in size.
  - d. Diameter is 7,700 miles. It is so nearly the size of the earth that it is called the sister planet.
  - e. 67,000,000 miles from the sun.
  - f. Takes 225 days to go around the sun.
  - g. Length of day is unknown.
  - h. Nothing is known about the surface of the planet because such a thick blanket of clouds surrounds it.
  - i. Is thought that there might be air on Venus, but that it contains little oxygen.
  - j. Galileo discovered that Venus goes through phases like our moon.
3. The Earth.
  - a. 8,000 miles in diameter.
  - b. Day is 24 hours long.
  - c. 93,000,000 miles from the sun.

Mars, Jupiter, Saturn, Uranus, Neptune, and the recently discovered planet, Pluto, were studied and information organized in a manner similar to the above.

## IV. Asteroids, planetoids, or baby planets.

1. Large pieces of matter that follow a regular orbit around the sun.
2. Eros and Ceres are two large asteroids.
3. Zone of the asteroids is between Mars and Jupiter.

## COMETS, METEORS, AND METEORITES

While the children were looking for information on the solar system they saw pictures and diagrams of comets which started questions: "What are comets? Where do they come from? What would happen if a planet got in the way of a comet? Why does a comet's tail always turn away from the sun? (One of the girls had seen a diagram which showed a comet approaching and leaving the sun. Its tail was turned away from the sun in both cases.) What is the comet's tail?" Answers to these questions were obtained through the children's reports on information found in books, magazines, and pamphlets. In one of the reports on comets, the statement was made that sometimes a comet disappears and the next time that it is due, meteors are seen instead of the comet. This, of course, raised the question, "What are meteors?" The information on this subject which we obtained from books and pamphlets was supplemented by articles from the newspapers concerning the Leonids, meteoric showers due in November.

The outline which follows is not exhaustive but it contains the facts which were found and discussed during our study of comets, meteors, and meteorites:

## COMETS

(Note: The word comet comes from the Greek word for hair.)

## I. How comets were formed.

1. Some may have been formed at the same time that the planets were.
2. Some may have been shot out from the sun.

## II. What a comet is.

1. Made up of dust, gases, and pieces of rock of various sizes held together by attraction of gravity.
2. Looks like a bright star with a tail behind it.
3. The head contains a nucleus that is supposed to be made up of a swarm of meteors.
4. The comet's tail.

a. Is made up of the lightest parts of the comet.

b. Is very thin. Stars may be seen through it.

c. Varies from a mere brush to millions of miles in length.

d. Is longest when nearest the sun and shortens as it draws away until it disappears entirely.

Note: The comet never gets back the part of the tail that it loses so it is always getting a little smaller.

e. Is always turned away from the sun whether the comet is approaching or leaving because the sun's light forces the lighter gases away from the comet.

5. Can usually be seen only when it is near enough to reflect the light of the sun.

## III. Comet Paths.

1. Paths of different comets go out in different directions and on different planes from the sun. The paths of most comets do not lie in the plane of the earth's orbit.
2. They are usually long and narrow, elliptical, with the sun at one focus.
3. Some comets have small orbits that can be completed in a few years. Others take thousands of years.
4. Sometimes comets get too near the sun or run into a planet and are broken up.

## IV. Speed of Comet.

1. Travels faster as it nears the sun until finally it whirls around the sun at a tremendous speed.
2. Travels slower the farther it goes from the sun until the sun's gravity pulls it back.



The best known is Halley's Comet which has been traced back to 240 B. C. About two hundred years ago, Halley figured that the same comets came back at intervals. He found, on searching through history, that a comet, answering the description of the one he was observing, had appeared at intervals of about seventy-six years. It crossed the sun in 1910 and will return in 1987. Some of the other dates when it was observed were 1066, 1607, and 1835.

The following paragraphs have been taken from Washburne's "The Story of Earth and Sky" to show how people used to feel about comets: "About seventy years after Christ was born, soldiers were fighting against the city of Jerusalem. A great comet appeared in the sky. Its tail made it look like a brilliant white and gleaming sword. The people were immediately frightened. They thought that this meant that the city would surely be taken by the soldiers, and it was."

"Again, nearly nine hundred years ago, Duke William of Normandy, later called William the Conqueror, crossed into England to fight the English king, Harold. In the midst of the battle, a big comet appeared in the sky with a gorgeous shining tail. Duke William looked at it and thought it was a good sign. "It means we shall win," he said. King Harold looked at the same comet, but he decided it was a bad sign. "It means we shall lose," he moaned. King Harold's men were discouraged, and they didn't fight well. William's men were sure of winning, so they fought bravely. King Harold was killed and William the Conqueror became the king of England. Perhaps the foolish beliefs of those two kings changed the history of England—and just on account of a comet."

### METEORS AND METEORITES

#### I. How Meteors were formed.

1. May be pieces that came off the sun when the planets were formed.
2. May be parts of the long streamers that are always being pushed out from the sun.
3. May be pieces of broken comets. When the earth has meteor showers it has run into the pieces of broken comets that are still following the regular paths of the comets.
4. May be particles that have drifted in from outside the solar system.

#### II. Why we see meteors.

1. The earth either runs into meteors or its gravity pulls them in.
2. When meteors rush through our air, friction causes the outside of them to become very hot and form gases. These hot gases make the meteors shine.

#### III. What meteorites are made of.

(Meteors are called meteorites when they fall to the earth)

1. Some are made of stone.
2. Some are made chiefly of iron.
3. Some contain metals such as nickel, copper, tin, and aluminum.

In two meteorites minute diamonds have been found.

Note: The pamphlet on "Comets, Meteors and Meteorites" by Chester A. Reeds, listed in the bibliography, gives three principal groups: aerolites, or stony meteorites; siderolites, or stony-iron meteorites; and siderites, or iron meteorites.

This pamphlet also gives records of early meteors and opinions held concerning them: "In commenting upon the fall of a meteor in 1807, Thomas Jefferson, President of the United States, expressed the prevailing opinion in regard to meteorites when he said that it was easier to believe that Yankee professors would lie than to believe that stones would fall from heaven." It is further stated that the brilliant display in November, 1833, of shooting

stars, later known as Leonid meteors, brought forth a decided change in the general attitude of the public in regard to meteoric phenomena.

#### IV. Size of meteorites.

1. They vary in size from a speck to thousands of pounds.
2. A meteorite weighing  $36\frac{1}{2}$  tons was brought from Greenland by Peary in 1897.

### CONSTELLATIONS

From the beginning of the unit the children looked for constellations and searched their books for necessary information. When the time came to discuss this subject, everyone had located the Big Dipper and Bootes, the constellation in which Arcturus is found, and had gathered quite a fund of scattered facts. Discussion of somewhat unrelated facts was continued until one of the girls announced that she had a report to give. For illustration she drew a diagram of the constellation on the blackboard and used it when she gave her report.

From then on the children worked in groups or individually to prepare reports to give to the class. Always the diagrams, which sometimes included other constellations to help in locating the particular one, were drawn on the board. When this procedure of looking up reports was begun, many of the children were entirely at sea, or "up in the air," to use a better simile in this case, because the only constellations they had ever heard of were the ones that had already been discussed. Then one of the boys compiled a long list of the names of constellations. At first the children thought that this meant that he had a monopoly on them, but when a meek request for one was granted, this boy could be seen thereafter magnanimously giving out names of constellations until the entire list was taken.

After a few reports on constellations had been given, one boy remarked that he had understood one of them especially well. Different children added that they had been able to understand some of the reports much better than others. The class then analyzed several of the good ones, and reached the conclusion that these reports were interesting and easily understood because the speaker knew his material well enough to speak with authority, and the material had been well organized. Sometimes after a report had been given objections were heard such as, "She didn't tell what magnitude the stars are," or "Weren't there any stories about that constellation?" A list of all the things that the children wanted to know about the constellations was made, and from this the following outline was worked out to be used as a guide in collecting and reporting material on constellations.

- I. What the constellation is; shape, number of stars.
- II. Where it is located in relation to; time of year, other constellations.
- III. Important stars in the constellation; names, magnitude, distance from the earth.
- IV. Stories about the constellation.

This outline was quite carefully followed. Often statements were heard such as, "I've found information on everything but the magnitudes of the important stars," or "I've everything ready but my beginning sentence," or questions were asked such as, "Did you see anything about Aquila in the book that you were reading?"

After reports were given, the children tried to locate the constellations in the evening sky. When some of the children

reported that they couldn't find a particular constellation it was suggested that night meetings be held. This resulted in several evening meetings during the winter season to locate winter constellations and, when spring came, more meetings were held to locate the spring constellations. We learned about the constellations with the important stars as nebulae as listed:

The Big and Little Dippers and the more inclusive constellation, the Great Bear; Cassiopeia; Bootes containing Arc-turus; Draco, the Dragon; Auriga, the Charioteer, containing Capella; Aquila, the Eagle, containing Altair; the Pleiades, or the Seven Sisters; Taurus, the Bull, containing Aldebaran; Leo, the Lion, or the Sickle, containing Regulus and Denebola; Pisces, the Fishes; Lepus, the Hare; Pegasus; Lyra, the Lyre, containing Vega and a ring nebula; Orion, the Hunter, containing Betelgeuse, Bellatrix, Rigel and nebulae; Cetus, the Whale; Gemini, the Twins, containing Castor and Pollux; Perseus; Cepheus; Andromeda, containing spiral nebulae; Hercules; Corona Borealis, or the Northern Crown; Cygnus, the Swan, or Northern Cross, containing Deneb; Canis Major, or Big Dog, containing Sirius; Canis Minor, or Little Dog, containing Procyon; Virgo, the Virgin, containing Spica; Monoceros.

#### FACTS ABOUT STARS.

The stars are suns sometimes hundreds of times larger than our sun. They are traveling at varying rates of speed, some toward us and some away from us. The nearest star, Alpha Centauri, is 25 trillion miles away. Distances of the stars from the earth are measured in "light years," the distance that light travels in one year or six million million miles. Stars are of different magnitudes. We can barely see those of the sixth magnitude with the naked eye. Our stars seem to swing around the North Star as their center.

#### NEBULAE.

1. A group of stars that is a whole universe in itself.
2. There are many nebulae or island universes in space.
3. Dark nebulae are bodies of black dust, billions of miles across.

#### NOVAE.

1. New stars that blaze up for a while then die out again.
2. May be caused by one star hitting another heavenly body or by an explosion.
3. Occur most frequently in the Milky Way.  
Milky Way is made up of countless stars that are between us and the edge of our universe.

#### TELESCOPES, ASTRONOMERS, AND OBSERVATORIES.

The children became interested in telescopes, astronomers, and observatories while they were learning about planets and stars. A part of the story of the development of the telescope was learned, beginning with Galileo's crude four-foot tube with a lens in either end to the two-hundred-inch mirror that is now being made at Corning, New York.

The story of the invention of the telescope was used to make the plot

for an original dramatization which was presented as a part of the program at the Festival of Nations. The names of many astronomers, past and present, were mentioned, but only the lives of a few were studied. Among these were Galileo and the Herschels.

Many observatories were located, with interest centering on those nearest Ellensburg. Several children laid careful plans to visit the Mt. Wilson Observatory at Pasadena, the Lick Observatory on Mt. Hamilton in California, and the Dominion Observatory in Victoria, B. C., during the summer vacation. As evidence of their keen interest they learned the exact time that visitors are permitted to look through the telescopes at these observatories.

#### THE PLANETARIUM.

The "planetarium" was a room in which only the materials concerning astronomy were kept. As the unit progressed, diagrams were made of the solar system and of comet's paths; books, magazines, pictures, and newspaper clippings had been collected. All of these were kept in the home-room until one morning it was discovered that there was no space left for even a newspaper clipping. After thinking the matter over, one of the children suggested that a temporarily vacant room might be used for a star room, and everything could be kept there. The class approved and the transfer was made. The name "Planetarium" was suggested later from discussions of the Chicago and Philadelphia Planetaria.

Then another problem had to be faced. Visitors to the Planetarium asked questions about the diagrams. Since it was impossible for some one to be in the Planetarium at all times to answer these questions, the children decided that they might write up the necessary information and attach these explanations to the diagrams.

The contents of the Planetarium grew as the study continued. Besides the reference materials, the exhibits included news items and diagrams with the accompanying articles which were written by the children. Also there were special bulletin boards for the sun, the moon, comets, meteors and meteorites, observatories, and the replies to letters written by the children to various observatories and astronomers.

Of special interest on the bulletin board for the moon were some beautiful photographs which one child had received a few years before from Dr. Neubauer of the Lick Observatory. They had interested her at the time, but said she, "They really didn't mean much to me until this year."

The constellations also had a place in the planetarium. After a report had been given it was evaluated and revised according to group suggestions. Then the individual reporter or members of the group arranged a diagram of the constellation using white ink and silver stars on black paper accompanied by the write-up of the constellation.

### RELATED SUBJECT MATTER ACTIVITIES

#### LANGUAGE.

A varied procedure was followed in writing up the articles for the planetarium. At first, the children who had reported on the planets thought that they could write the articles. When these written reports were presented to the class, however, it was found that some information had been omitted because important facts had been contributed by other children after the original reports had been given. Then, too, the facts had been assembled in a hit-and-miss sort of way. The class realized that organization was necessary and set about it by first collecting all the facts about the subject. Then these were organized by putting them under their respective headings. Good beginning sentences, sentence structure, and paragraphing were worked on intensively. Then the articles were written either by the whole class or by the original reporters and placed in the planetarium.

Sometimes, children working alone or in groups succeeded in composing articles that partially satisfied the group as to detail and organization. After the necessary criticisms, these were rewritten, signed, and placed in their proper places. Only one of the many compositions is included here.

#### The Big Dipper

The Big Dipper is a very interesting and well known constellation. It has seven stars in it. Four of the stars are in the shape of a dipper and the other three are in the shape of a handle. The handle part of the dipper is the tail of the constellation of the Great Bear. In the handle of the Big Dipper is a double star, the big star is Mizar and the little star is Alcor. The Indians used to say that if you could see Alcor, you had good eyesight.

There are many uses for the Big Dipper. The first is to tell time. In early times, the people told time by the Big Dipper in this way. At six o'clock the Big Dipper is level; at twelve o'clock it is side ways, east of the North Star; at six o'clock in the morning it is upside down above the North Star; at noon it is sideways again, only west of the North Star. This is in the autumn. Another way the Big Dipper is helpful is to tell the direction that you are going. If you are lost, you look at the pointers and find the North Star and that will tell where the north is. You can find many constellations by the Big Dipper. The Little Dipper, Gemini, Bootes, Auriga, the Lion, and the Dragon are some of them.

There are many interesting stories about the Big Dipper. We thought you might like this one. A long time ago there was a great white bear that no one could kill. One day a boy, whose mother had disappeared when he was a tiny boy, said that he was going out to see if he could kill the big white bear, and was not coming back until he did.

One day he saw a bird flying so he thought he would take a shot at it. The arrow missed the bird but hit the bear right in the heart. When the boy saw this, he called to his friends. After the bear was hit, it said, "Ah, my son," At this, the boy knew it was his mother. Then his father, Jupiter, took them up into the sky, and when the friends got to where he had been, he was not there.

We can see the constellations of the Big and Little Dippers all during the year.

#### READING.

In looking for material for reports, the children learned to use the table of contents and index of each book and how to find material in magazines and encyclopedias. They also learned that all books do not agree on facts and opinions.

When books were found to disagree, the children, almost invariably, felt that the book with the most recent copyright contained the most authentic material. Even so, books published as early as 1886 were studied diligently by a very few, just to see what they contained that was different from the later books. This comparison, entirely voluntary and "on their own" was not very thorough, but it was interesting.

As time went on, the children seemed to realize more and more their ability to find material for themselves. They began to find new sources of material in newspapers and magazines. "Uncle Ray's Corner" and the "Weekly Science" column in the Portland Oregonian were watched for information. Several children subscribed to the Nature Magazine after discovering that it contained star maps and very interesting articles on astronomy.

Vocabularies were continuously built up through reading and reporting. Dictionaries and glossaries were found to be very helpful and were consulted numerous times regarding pronunciation and meaning.

Some of the children were particularly interested in the poetry and legends concerning astronomy. After some preliminary preparation the

poems were read to the group. Most of the legends were told the group in the reports on stars, but some were read just for recreational reading.

Poems from "Ring-Around," a collection made by Mildren P. Harrington; "The New Moon" by Eliza Lee Follen, "Mockery" by Katherine Dixon Riggs.

Poems from "Silver Pennies," a collection by Blanche Jennings Thompson; "Moon Folly" by Fannie Stearns Davis, "Stars" by Sarah Teasdale, "The Moon's the North Wind's Cooky" by Vachel Lindsay.

Legends other than those connected directly with the constellations: Legends from the "Book of Nature Myths" by Florence Holbrook; "Why the Face of the Moon is White," "Why All Men Love the Moon," "Why there is a Hare in the Moon," "The Children of the Moon," "Why there is a Man in the Moon."

"Tanglewood Tales" by Nathaniel Hawthorne; "The Minotaur," "The Three Golden Apples," "The Chimaera," "The Gorgon's Head," "The Golden Fleece."

#### ART.

One of the children suggested that the fifth grade make books of the articles and diagrams in the planetarium and sell them at the Festival of the Nations, an annual school function which includes exhibits, programs, and a bazaar. The articles were copied and the diagrams were drawn on a scale small enough to fit the page. These were transferred to stencils and mimeographed.

In art class, each child made a design that he thought would be suggestive of astronomy and, at the same time, would make an attractive book cover. The two best designs were chosen, and transferred to the covers of the astronomy books.

#### ARITHMETIC.

When the children were giving reports on the planets, they found that one of the interesting facts about each was its distance from the sun. At first they had great difficulty in reading these numbers, but arithmetic time was taken for this purpose until the children became adept in reading numbers extending to billions and in considering distances in terms of light years.

#### MUSIC.

After the children had learned about the planet, Venus, they observed it as the beautiful evening star. Therefore, all were interested when the teacher told the group that she had heard Lawrence Tibbett sing, "To an Evening Star." They wanted to know more about the song.

Their music teacher explained this selection from the opera, "Tannhauser." After she had told the story and played Victrola records from this opera, the children wanted to learn to sing "To an Evening Star." They were told that this is a hard song to sing, but enthusiasm for learning it did not wane. Many children reported having heard it sung over the radio, two of the children learned to play it on their violins, and the entire group learned to sing it in chorus.

Other star songs were learned from The Music Hour, Fourth Book, Silver Burdette, "Stars are Always in the Sky," Johannes Brahms, and "The Stars," C. Gramm.

#### DRAMATIZATION.

For the dramatization to be given at the Festival of Nations the class agreed, unanimously, to show the differences of opinion between the past and the present concerning the universe. Topics that would show these differences were discussed; Galileo, the invention of the telescope, the beliefs concerning the earth as the center of the universe, early beliefs about comets and eclipses, and the modern ideas regarding these. During our language period the material was organized into scenes.

The play "Galileo" was given to show the old ideas concerning the

universe. Because time on the Festival of Nations program did not permit a longer play, it was decided that the modern ideas could be obtained from visits to the planetarium.

### ORIGINAL DRAMATIZATION

#### "GALILEO"

Characters—Galileo, Barto, the Merchant, Merchant's Wife, People and Three Men.

#### Scene I

Galileo's Home. (Galileo and friend enter. Galileo is moving two lens back and forth before his eyes. Sits beside table.)

GALILEO. Here, take these two lens and look through them.

FRIEND. (moving lens back and forth.) Oh, things look so much closer and so much bigger, Galileo, but they are upside down. Where did you get the idea?

GALILEO. A few years ago, about 1600, in Holland, there lived a lens maker by the name of Hans Lippershey. During his absence one day, his boy looked through two lens and found that things looked much closer. When Lippershey returned, his boy showed him what he had discovered. Then Lippershey made a wonderful instrument called a telescope.

FRIEND. What does telescope mean?

GALILEO. It comes from a Greek word "tel" meaning afar and "scope" meaning to see. Here, I have a four-foot tube, (picking up tube) and I shall place a lens at each end of it. Through this I hope to discover many new and interesting things. The stars have always been a mystery to me.

FRIEND. That's ridiculous. There's no mystery about the stars. We're here and all things go around us. The sun comes up in the morning and goes down at night. The moon comes up on one side and goes down on the other, and the stars come out at night.

GALILEO. I believe that we go around the sun.

FRIEND. (gasps) You'll get yourself into trouble believing all these strange things.

GALILEO. (laughs) Come, let's go look through my new telescope.

Exit.

#### Scene II

Street Scene. (Five people enter.)

FIRST PERSON. Where is this man, Galileo, who says such strange things?

SECOND PERSON. He studies the heavens from that balcony. (Everyone halts.)

THIRD PERSON. He says that Jupiter has four moons and we know very well that our moon is the only one in the world.

FOURTH PERSON. He says that our moon has mountains and valleys on it.

FIRST PERSON. Now that is ridiculous.

SECOND PERSON. He says that the moon doesn't shine by its own light but by the sun's reflections, and we know that the sun has gone to rest when the moon is shining.

FIFTH PERSON. He says that Venus changes its shape just as our moon does.

SECOND PERSON. I used to be a friend of his but now I don't know whether that is wise or not since he believes such strange things. I might get into trouble.

(Galileo appears on balcony.)

PEOPLE. Sh! Sh! There he is! Look out!

(People crouch down.)

GALILEO. Come, my good friend Barto, let's look at the sun today and see if those spots are still there.

SECOND PERSON. See there! He says that there are spots on our sun.

(Barto blinks at sun. Galileo arranges telescope.)

GALILEO: I have a dark glass which I shall place at the end of the telescope. Then the light will not blind me.

BARTO. You can't look at the sun; it will blind you.

(Barto looks through telescope and gives it to Galileo. There is a knock at the door.)

BARTO. Someone is at your door, Galileo.

GALILEO. Will you please go let them in, Barto? I think I see a new spot on the sun.

FIFTH PERSON. The king and queen should know about this.

THIRD PERSON. Quick! Let's tell them before his magic destroys us. (People exit.)

(Barto enters.)

BARTO. There is a merchant and his wife to see you, Galileo.

GALILEO. Show them in, Barto. They probably want to look through my telescope.

(Barto shows in merchant and his wife. All bow to each other.)

MERCHANT: We have some ships that have been delayed a long time. We have heard of your wonderful instrument that brings things closer. May we look through it to see if we might see our ships?

GALILEO. There were some ships coming toward the harbor earlier in the day. Some of them may be yours. (Focuses telescope.)

MERCHANT'S WIFE. (Looks, gasps, looks again.) Look, quick!

MERCHANT: (Looks.) Ships! They look like ours! Let's go meet them. (Merchant and wife start to leave.)

GALILEO. Wait a minute, merchant. Those ships won't be here for hours.

MERCHANT. Oh yes, I forgot. I guess I must have been excited. Thank you very much for letting us look through your telescope.

(All bow, merchant and his wife leave.)

BARTO. I can't understand why people won't believe what you tell them about our universe when they can see with their own eyes that what you say is true.

GALILEO. (shakes head) Well, the sun's down, we can't look at it any more today. (Exit.)



**Scene III**

Room in Rome. Years later.

**GALILEO.** (Sitting at table. Rises and paces back and forth.) Here I am in Rome. No friends, everybody against me. They are going to make me sign a paper saying that I don't believe that what I have written about my discoveries is actually true. (Sits at table with head in hands.)

(Three men enter.)

**FIRST MAN.** Here is the paper for you to sign. Sign it or we will torture you.

**SECOND MAN.** (Reads paper.) This is the paper you are to sign: I will give up the false idea that the earth goes around the sun and I will not teach it or print it in a book. (Gives paper to Galileo who signs it.)

**THIRD MAN.** If you know of anyone else who believes this falsehood or who is teaching it, you must stop them or tell us.

(Men leave.)

**GALILEO.** (After resting head in hands for moment. ) I'm an old man. It's a pity that people won't believe the truth.

**OUTSIDE ACTIVITIES**

The activities in school led to many outside activities.

Children followed up every available source of information by writing letters of their own accord. Several children came to school proudly bearing answers to their letters. These replies, written by "real astronomers" were so full of interesting information and understanding of children that immediately many of the children declared that they, too, wanted to write. After a discussion concerning subjects about which information was needed, it was decided that it was possible to find material on almost every topic in their own reference books. However, the children are still writing. Some are keeping up a correspondence, and a new astronomy booklet appears at intervals.

These children had determined to build an observatory of their own on a small hill near the school. Knowing that an observatory would be a lifeless thing without a telescope, they considered all plans, including seed-selling, as possible means of securing the telescope.

Other outside activities, besides the building of the observatory on Craig's Hill were private planetariums in homes and woodsheds. Some children made individual books in which they kept copies of the articles which we had written for the

planetarium, pictures, newspaper clippings, poems, and everything else pertaining to the subject that could be included in a book. Several of the children who belong to a Camp Fire group, chose astronomy for their hobby and earned birthday honors as a result of their activities.

### GENERAL OUTCOMES

During this study the children came to many conclusions. One day, after a class discussion on nebulae, a boy remarked, "Space just never ends." Another boy, several weeks after we had begun our study, boasted that he guessed we knew everything about stars. Some weeks later he said, "Gee, that must have been funny when I said that we knew everything about stars. I guess we never will know all there is to know." The children realized that new things are constantly being discovered. Even after a different unit had been under way for sometime, a large share of the period was still taken up by the reports on one phase or another of astronomy. One member of the class objected to having this much time taken from the main subject. The majority of the class, however, declared that it was absolutely necessary to use a part of the period every day for stars "because scientists are always finding new new things." To these children, any discovery was news and must be shared with the others immediately. Superstitious beliefs and astrology were discussed and poo-pooed. One mother reported that her daughter, a member of the group, had chided her for being superstitious when she said, "If we see the new moon over our right shoulder it means good luck."

In the children's work, their conversations, their constant search for information, their outside activities, and their continued interest there was evident growth in the following skills, appreciations, and interests: the ability to plan and work with the group, the ability to find material and to organize it into the form of a report, the ability to read large numbers, the ability to write a good composition, the ability to think scientifically, a respect for the opinion of others, an appreciation of what scientists have done and are doing, an appreciation of the beauty and the meaning of things in the space around us, an interest in the legends and myths about our stars and planets, an interest in what may become a very wise use of leisure time, a realization of the value of good and up-to-date

books, and, a realization that there remains much to be learned.

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## CONSERVATION OF WILD LIFE

### Game Laws and Game Control

Lillian Bloomer, Supervising Room Teacher

One crisp, autumn morning the first day of the open season on upland game birds in Kittitas County, there was much excited discussion in the sixth grade classroom. Children congregated in little groups and told of the birds which had been killed that morning by early morning hunters. The teacher encouraged discussion and was keenly aware of the intensity of feeling among many of the children who actively took part in this discussion. Their remarks revealed a lack of definite knowledge of game laws, an unawareness of need of law and law enforcement, and an all too small amount of appreciation for the wild life of the state.

Following are listed some of the incidents cited by the children and comments made by them. Some indicate ignorance, others unintentional violation of law, and others intentional evasion, violation, cruelty, and lack of appreciation of wild life.

"My uncle got three pheasants last Sunday,"—the game season did not open until almost a week later. Accounts were given of members of families who had hunted before sunrise and after sunset. A child of ten years whose father bought him a gun had been hunting with two companions of the same age,—use of firearms by a minor. Another lad had hunted with his father's gun which was larger than the allowed ten-gauge size. One boy reported that a friend had gone out once, had returned to town with the bag limit for the day and gone on again for a second bag limit. Another report told of a hunter who had been sure he had killed or wounded at least ten birds, but could find only four. Many accounts of more than bag limits being obtained were given. One child reported that a load of shot had gone whistling past his head on his way to school, another told of someone who had shot across the highway, and another of a hunter who shot into a herd of fine cattle.

A few of the children were much amused at an account of a hunter's skill in evading the game warden. An otherwise

kindly child told of finding a badly wounded bird and giving it a kick before it could escape and hide. Another reported with much confidence that there would be no pheasants when his father was "through with them!"

The teacher was much surprised to find even among these usually kind and tolerant children, an antagonistic attitude toward hunters who did not live in this immediate territory. Many of these hunters, through lack of consideration of the rights of others, and disrespect for property, were responsible for this attitude on the part of parents and children of the local community. However, these men bought hunting supplies from the local merchants, patronized hotels and restaurants, bought gasoline, and, in many cases, before recent State Game Control legislation, bought county licenses, the proceeds of which went to the local County Game Fund. Nevertheless, there was a strong feeling of sectionalism among our children.

Here, then, was the problem as expressed in outspoken sincerity and spontaneity by this group of children: a lack of definite knowledge of game laws, an unawareness of need of law enforcement, a somewhat negative attitude toward law enforcement officers, and little, if any, appreciation of the need of conservation of the wild life of the state, as well as a feeling of rather strong state sectionalism.

Realizing that the children had many misconceptions, it was hoped that through investigation and study, attitudes might be changed and a more constructive point of view developed. Future work was organized with the following major aims in mind.

1. To give a knowledge of understanding of the Game Laws of the state and nation and how they apply to us as individuals and a community.
2. To develop an awareness of the need of law.
3. To instill a respect for law and law observance.
4. To develop a knowledge and appreciation of the wild life of the state.

Child comments which were used in developing the needed unit were: a. "I think it is a wonder there is any game left after each year's open season." b. "I think a man who goes out and shoots game out of season is a poor sport." c. "I think a man should be allowed to shoot game at any time of the year

if he is on his own land." d. "I wonder why the season isn't open for several days at a time rather than one day at a time." e. "A man should be allowed to use any size gun he wants to use." f. "The birds eat the farmer's grain and why shouldn't he kill them?" "The city men don't feed them, they just come out and shoot what the farmer feeds!" g. "I suppose the game wardens want to arrest as many hunters as they can so they can have the money."

As the questions accumulated and challenges for thought were given, the children decided they needed material from which they could ascertain what the game laws are and the question arose as to the wisdom of the game laws of the state. There was much difference of opinion on this last point before the study began. However, the question as to the wisdom of the game laws of the state was the opening challenge and real starting point.

Though there was little available reference material on this subject, with the cooperation from the State Game Department, each child was able to have the use of the following pamphlets:

Game and Game Laws, U. S. Department of Agriculture.

Game Laws of Kittitas County.

Hunting and Trapping in the State of Washington.

Migratory Bird Laws, U. S. Department of Agriculture.

A statute book of the State of Washington was loaned to the children by a former county game commissioner. As the unit progressed, other governmental bulletins, various pamphlets and magazines were added to the list. Current newspaper articles served as additional stimulation on many occasions.

The procedure in this unit was necessarily very informal and so, during the first few days, much conversation and discussion took place in which challenges were put forth and accepted by the class. Then all available materials and sources of information were investigated to learn about and to evaluate some particular law or phase of game control. This was reported back to the class by individuals or a group. Class discussion and evaluation followed these reports.

Differences in opinion often led to informal debates at which time children presented assembled data as proof of their

statements and, from these, conclusions were reached. This phase of the work presented a splendid opportunity to develop an open-minded attitude and a tolerance for opinions of others. The children also became aware of the fact that changing one's mind after considering additional data is often necessary. As the children began to understand the problems, there was a marked change in their attitudes toward game control.

One child's question regarding the purpose of meetings and procedure of the county or state game boards, led to the suggestion by another that the group organize a "Game Commission" for their room to revise laws, render rulings, and consider needed legislation. Accordingly a Game Commission was formed, a chairman and other officers appointed. For these sessions, simple parliamentary procedure was studied and followed.

By this time the children had gleaned a wealth of information regarding game laws in effect, the need of enforcement as well as the need of conservation and propagation of game birds and animals of the state. During periodical meetings of the "Game Commission," rulings were drawn up, present laws were "revised" and new measures formulated which children felt were needed for the best interests of the entire state and community. These were considered carefully and accepted or rejected on their merits.

During the study of this unit, an initiative measure was before the people of the state to be voted on at the November election. The purpose of this measure, briefly stated, was to transfer to a state board much of the power and some of the duties regarding game control that at that time were vested in separate county game commissions throughout the state. The children were much interested in this measure and out of this interest came a study of the following: the initiative measure itself; meaning of initiative and referendum; how a bill becomes a law; veto power of governor; emergency clause carried by some bills, important in the game control bill; time of state elections; who may vote; registration, etc.

Interest in the passing of this measure was strong. The children watched election returns and all current material until the State Game Control Measure became a law. They anx-

iously awaited the publishing of the new game code. They compared it with the former code and found the only important change was in the centralized control and administration. Some children who had strenuously objected to state control began to see and admit advantages in the new law.

During this time it was most gratifying to note the changing attitude of children and the growing tolerance that came with their greater understanding and knowledge of this subject.

#### **FACTS AND INFORMATION GAINED FROM THE STUDY OF THE UNIT**

1. Kinds of game found in this county and state.
2. Classifications; upland game, migratory game, predatory, non-game, fur bearing.
3. Open season for each kind of game and bag limits.
4. Hours for hunting, sunrise and sunset, how determined.
5. Closed sections of county, why.
6. Why seasons and bag limits differ in various counties.
7. Licenses; kinds, cost, where obtained, by whom required, use of, disposition of fees.
8. Disposition of fines.
9. Special regulations such as; use of dog, prohibited devices and appliances, restrictions regarding size of guns and why, use of lights, shooting across highways from vehicles or aircraft, devices for suppressing noise of firearms, deer tags and tagging requirements, wastage law.
10. Purpose, powers, duties, personnel and need of game commissions, state and federal control.
11. State Game Fund, how built up, its disposition, etc.
12. Regulations regarding hunting on certain restricted areas within state, as along Columbia River, Snake River, certain islands, wisdom of these laws.
13. Location of county, state, and federal game and bird refuges in state with kind of regions chosen, birds and animals protected, laws protecting birds, their eggs and such refuges.
14. Location of national forests within the State and regulations for hunting therein.
15. Migratory Bird Laws; study of bird migrations, relations of state and federal control; why federal control as well as state control is needed, regulations taking migratory birds, shipment and transportation of, Lacey Act.
16. The feeding problem of state and federal government to save wild life during severe weather, etc.
17. The need of, means of, and under what authority propagation, restoration, and conservation of game is carried on.
18. Our problem at present.

#### **RELATED SUBJECT MATTER**

##### **GEOGRAPHY.**

The location of game and forest reserves on map of the state. A study of Kittitas's County streams, noting open and closed waters.

##### **ENGLISH.**

A study of standards of good oral reports and talks. Much practice given in this. Informal debates and group meetings sometimes using parliamentary procedure were carried on. In written English, news items on various phases of game control were written for the school



paper. Letters were written to the state and federal governments requesting bulletins, pamphlets, etc. Much attention was given to the making clear and concise statements in revising laws and in formulating new measures for game control. Paragraphing was emphasized in articles of two and three paragraphs written for use in "Game Control" booklet made by the class.

#### CIVICS.

The meaning of Initiative and Referendum, how a bill becomes a law, emergency measures, veto power, election dates, registration, qualifications of a voter.

#### READING.

Definite skills such as outlining material for talks and articles, reading to prove a point, practice in retention of material, growth in use of table of contents and indexes in various books, magazines, and pamphlets. Vocabularies were enlarged by use of new words, terms, and phrases. Both prose and poetry appreciation was possible. Marguerite Wilkinson's lovely poem "A Chant Out of Doors" lent itself particularly well to nature appreciation and Bryant's "To a Water Fowl" was of interest to the children at the time of study of migratory birds. For prose appreciation Felix Salten's beautiful story "Bambi" was found to be one of the best.

#### HEALTH.

Many opportunities for health teaching were presented in problems, clothing for trips, sanitation of hunting camp, first aid, safety first, precautions, etc.

#### ARITHMETIC.

The cost of hunters' supplies, guns, shells, licenses, distances traveled, mileage problems, etc., lent themselves very well to the arithmetic period.

#### ART.

Art principles of color and design, were used in making a large colored picture map of the state on which were shown the game preserves, refugees, with the habitat of various game. Predatory, fur-bearing, and other birds and animals were sketched in. A cover for a booklet was designed and made by one group not working on the picture map.

#### RELATED ACTIVITIES.

Interviews with game commissioners and sportsmen, reports and talks. Informal debates, the making of collections of pertinent articles and pictures, practice in conducting meetings and participating in same, formulation of proposed measures for game control, and filing same, making lists of health and "safety first" rules for hunters, the building of a "True Sportsman's Code," making a bibliography of available material, a picture map of state game preserves, and a booklet on Game and Game Control.

### GENERAL OUTCOMES

1. A knowledge and understanding of the game laws of the state and nation and how they apply to us as individuals and a community.
2. An awareness of the need of law.
3. A respect for law and law enforcement.
4. A realization of the need of individual responsibility in making laws and maintaining law observance.
5. A recognition of the gravity of the offense in law violation.
6. A respect for law enforcement and the officers so employed.
7. An understanding of the need of present game preservation through knowledge of past practices, such as the extermination of antelope and buffalo.

8. A lasting interest in conservation and restoration of game and non-game birds and animals in the state.
9. An appreciation of the need of conservation of all natural resources.
10. A feeling of civic responsibility.
11. Appreciation of the beauty of nature.
12. Recognition of the rights of others.
13. Constructive habits of thought.
14. Desirable habits of study.
15. An awareness of the many available sources of reference materials other than books.
16. Skill in efficient use of pamphlets, bulletins, magazines, and newspapers.

Following this unit, as an outgrowth of the children's interest and their unanimous request for it, a science unit on Wild Animals and Birds of North America developed.

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- Field and Stream*. 578 Madison Ave., New York.
- Sports Afield*. 900 Phoenix Bldg., Minneapolis, Minn.
- Hunting and Fishing*. 108 Massachusetts Ave., Boston.
- Current local daily papers*.