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VISUAL EDUCATION
AND THE
ST. LOUIS SCHOOL MUSEUM

By

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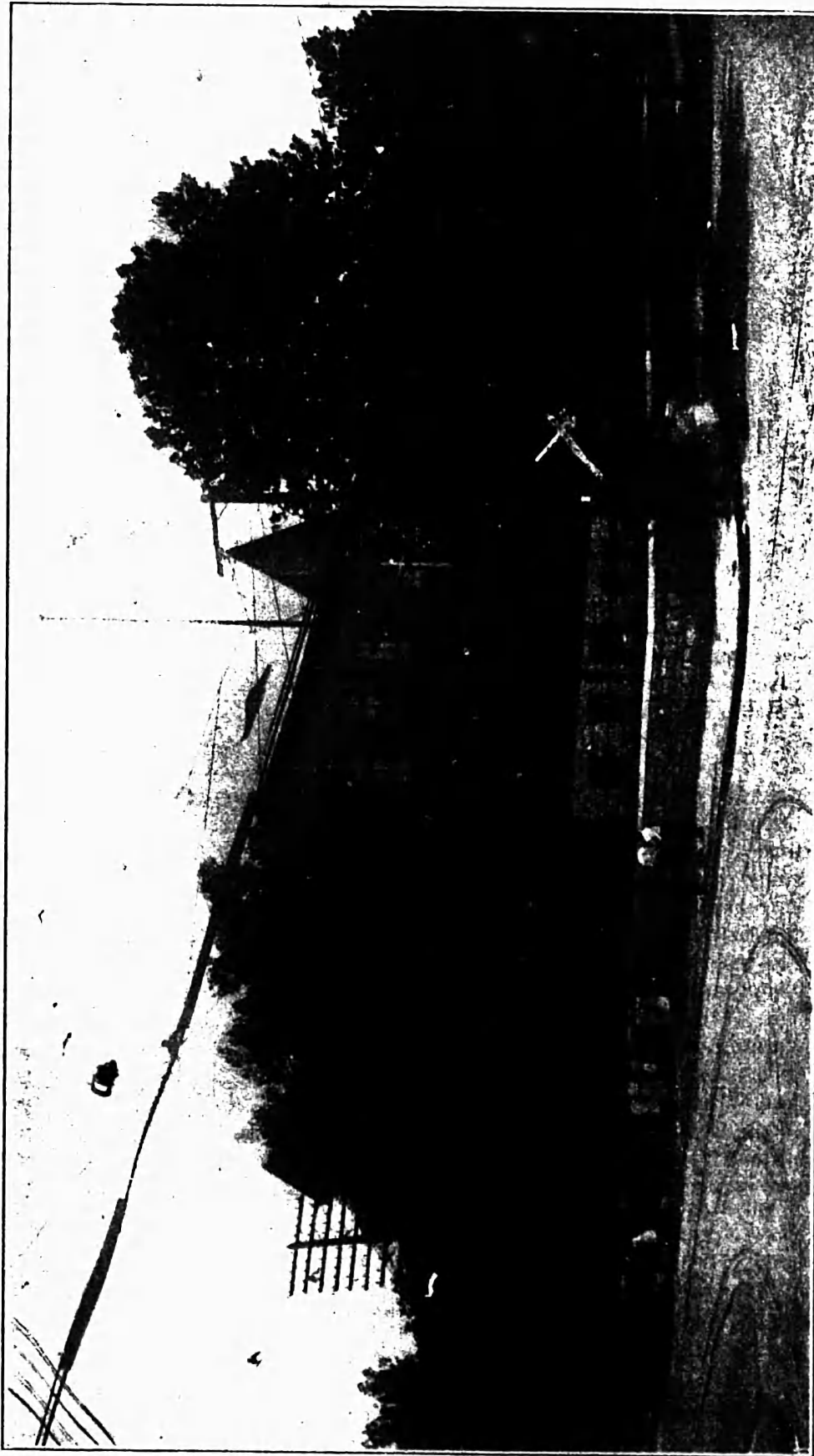


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EDUCATIONAL MUSEUM BUILDING

IV

VISUAL EDUCATION AND THE ST. LOUIS SCHOOL MUSEUM

Our schoolrooms of to-day are becoming what they should be, educational workshops. Teachers and pupils are happy in their work because the activities of the schoolroom, the life and spirit in it, are becoming such as will awaken and maintain interest and pleasure in the work.

No longer do we see the teacher sitting at the desk, most of the day with the textbook before her, asking all the questions, the pupils answering as many as they can, depending mostly upon how well they have memorized the text of the book. The child is coming into his own. The pupils are beginning to do their own observing, thinking, and discovering; the teacher helping, guiding, and inspiring. There is a tendency everywhere to have the children do their own learning under the direction of the teacher, the latter stepping more and more into the background, but never losing her hold on the work and the pupils. Activities which awaken and cultivate initiative, self-expression, and self-activity determine and motivate the presentation, discussion, and drill of the work in the various subjects. Projects and problems that call for inquiries, investigations, experiments, manual expressions, readings, and discussions—with their valuable socializing influence—constitute an important part of these activities.

As a result of modern, rational methods of teaching and learning, the relations between teachers and pupils are becoming more and more what they should be, those of coworkers, comrades, good friends. One of these methods is visual education.

WHY VISUAL EDUCATION

When Hamlet was asked by Polonius, "What do you read, my lord?" he replied, "Words, words, words." This could be said of the work in the schoolroom not very long ago when the children were passive recipients of what teachers and textbooks gave them. They read and heard about the earth, about the great changes produced on its surface through the activity of nature and man, about the people, their life and work and their adjustment to their environment; but no concrete experiences helped them to understand and digest what they were expected to learn. They read and heard, but they did not see any of the wonderful things they heard and read

about; and the more they read and heard, the more anxious they became to see and to get into personal contact with the things about which teacher and textbook told them.

To make the children acquainted with the world in which they live we must bring them into personal contact with the world. "As far as possible men are to be taught to become wise, not by books but by the heavens, the earth, oaks and beeches; that is, they must learn to know and examine things themselves and not the testimony and observing of others." This doctrine of Comenius, forgotten for centuries, has come to life again, and we are beginning to realize that, if we want to give the child vivid and lasting impressions of materials and processes which he is to learn, and to awaken in him



THE SCHOOLROOM TURNED INTO A WORKSHOP PROTRAYING INDIAN LIFE

the desire and the ability to do his own exploring and discovering, we must take him into the world or bring the world to him.

VISUAL INSTRUCTION IN MANY FIELDS

Visual instruction is not confined to the schools. It has become the most popular and the most efficient method of disseminating information and knowledge. The graph, the diagram, and the picture convey a message far more vividly and impressively than the most carefully worded statement. The newspapers, bare of all illustrations not many years ago, to-day supplement their statements by copious pictorial representations, thereby making the information they give more intelligible and convincing. Commercial and indus-

trial establishments appeal to the eye of the public, and by means of pictorial representations tell the people what they have to offer. The colored poster is playing a prominent part in commercial advertising. The reports of all the departments of the National, State, and municipal governments contain a wealth of graphs and pictures which enable the public to understand the message better than would a complicated mass of statistical data.

SUCCESSFUL FUNCTIONING OF VISUAL EDUCATION

In order to make visual education function successfully, three factors must be considered: 1. Careful selection of the material. 2. Proper presentation and discussion. 3. Judicious organization of pupil experiences and of thought development.

MATERIALS FOR VISUAL EDUCATION

When we peruse the periodicals on visual education with which the schools are flooded at present, we are given the impression that there is but one legitimate and efficient medium through which the child can become acquainted with what he should learn about the world in which he lives, namely, the moving picture. The motion picture has begun to play an important part in school education. Its value as a means of visual instruction will be recognized more and more, as more and better pictures are produced. It is the most lifelike pictorial representation of conditions, processes, and influences involving action that exists. But it is only one of the media of visual education.

In the larger cities some of the best material for instruction through the eye is supplied by the large museums. These institutions have opened their great storehouses of information to the schools and welcome teachers to make extensive use of the wonderful things from all parts of the world in connection with their school work. Some of the museums send a number of typical collections of illustrative material to the schools. Others invite teachers to bring their classes to the museum and to give their lessons aided by a wealth of interesting articles placed at their command.

Some of the larger museums have opened school branches which supply the schools with material for visual education. They are the National Museum in Washington, the Field Museum of Chicago, the Philadelphia Commercial Museums, the Cleveland Museum, and others. A number of children's museums, excellent institutions like those in Brooklyn and Boston, give valuable opportunities for visual education to school children. The Educational Museum of the St. Louis Public Schools supplies all the schools of the city with objects and pictures for the illustration of all features of school work.

TAKE THE CHILDREN INTO THE WORLD

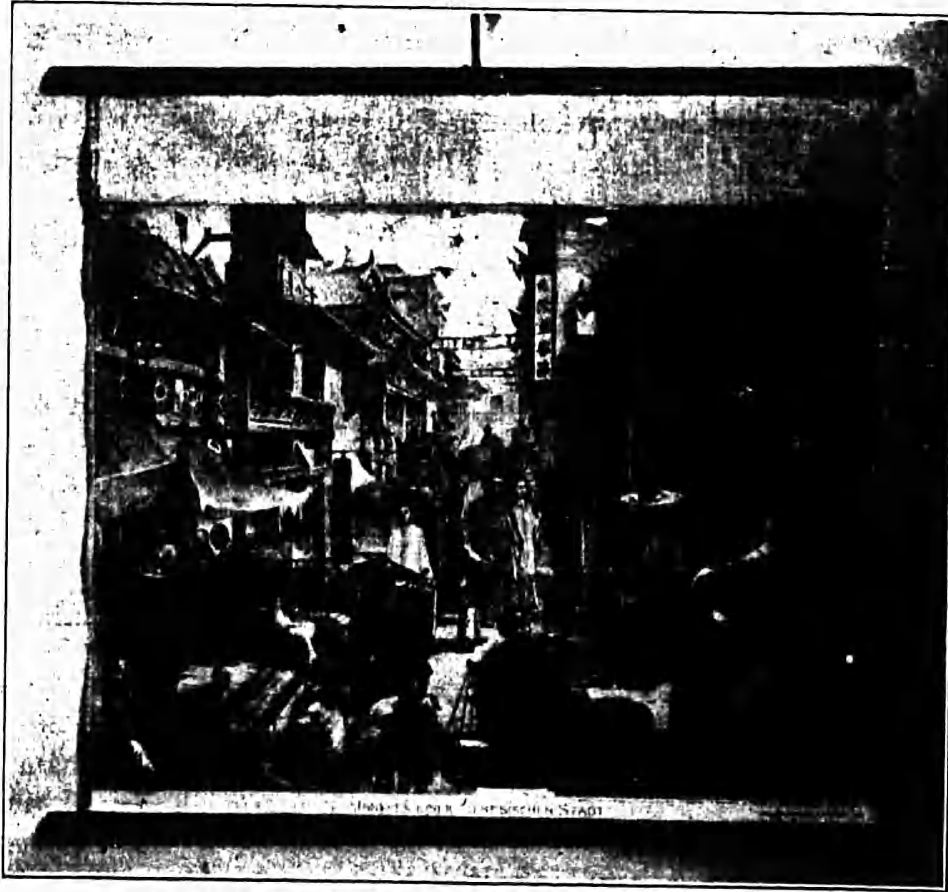
Museums, motion pictures, lantern slides, stereographs, and other pictorial illustrations bring the world to the child. But before the world is brought to him, he should be taken into the world as far as ~~it~~ it can be opened up to him. We must get away from the idea that all teaching and learning is to be done in the schoolroom. Teachers should take their classes to park, field, and forest to study nature in her own dominion where she can and does give intelligent answers to all our questions; to study animals, plants, and minerals in their proper surroundings. To every place in the neighborhood of the school where the child can properly be given concrete experiences as to the physical and human environment in which he lives, teacher and pupils should go.



STUDYING SWITZERLAND WITH THE AID OF MUSEUM MATERIAL

Opportunities for such study are offered in every city by the parks which are within easy reach of most of the schools. In them are roadbeds, slopes, hills, brooks, and ponds, the careful study of which will enable the children to picture to themselves the features of land and water on the earth. For the study of the human environment, man and his wants, his industrial and commercial pursuits, opportunities are found in abundance in the immediate neighborhood of every schoolhouse. Shops, houses in the course of erection, quarries, etc., should be visited, and the actual work and conditions observed and studied, not in the vague, inaccurate way in which children may have looked at them before, but with a conscious and definite aim. Such lessons are type lessons which give the teacher the most valuable help for her work in the schoolroom.

Teachers of the higher grades should take their pupils to industrial and commercial establishments and to public institutions to bring them into actual contact with conditions of life and work. Take the children to a shoe factory. Let them see how the raw material is brought in, let them observe the various processes through which it has to go, the various articles that are made of it. Let them observe the people at work in the different departments. Take them into the offices to see the typists, stenographers, bookkeepers, cashiers, and managers at work. Let them get some idea regarding the prospects



WALL CHART SHOWING LIFE IN A CHINESE TOWN

for a successful career open to these workers, their wages, the hours of work, the education they must have, the conditions under which they work, and the dangers to life and health to which they might be exposed.

Then go back to the schoolroom and discuss with the children their observations and compare them with those made in other establishments. Valuable vocational information also is given in this way; this information may help the child to make a proper selection of his own life work.

Such excursions into the child's environment where he can get first-hand impressions and experiences are instructive, broadening,

and stimulating. Through them we take him into the world. It is but a small, a limited world, which we can open to him; but it is his world, with which he should become thoroughly familiar; and this small world is a miniature representation of the larger world. Securing all the experiences possible in it will give him the power to picture to himself things, conditions, and processes in the larger world.

Visual education, through bringing the child into personal contact with things, conditions, and processes of the environment of his school and home, and through giving him, by means of observation and study, opportunities to gather valuable experiences, is given too little attention in the schools of our country. The value of this first and most important step in visual education is not sufficiently recognized. Let us take the child into as much of the world as we can show him, and then bring the rest of the world to him through objects and pictorial representations.

CAREFUL PREPARATION FOR OUTDOOR TEACHING

The places where the child is to be given concrete experiences in connection with his school work must be carefully selected. The teacher must visit them beforehand and satisfy herself that they offer just what is needed to give the child vivid and lasting impressions of what he is to learn. She must be well prepared for her work; she must have a definite plan of what she wants to present and of how she wants to present it. She must not allow the attention and interest of the children to be scattered and to be directed to materials and conditions which are not related to the subject under discussion.

As to the visits to industrial and commercial establishments and public institutions, the teacher must confer with the manager or director as to what is to be observed and studied. If the program is not carefully mapped out, the excursion may prove a waste of time and its purpose may be defeated.

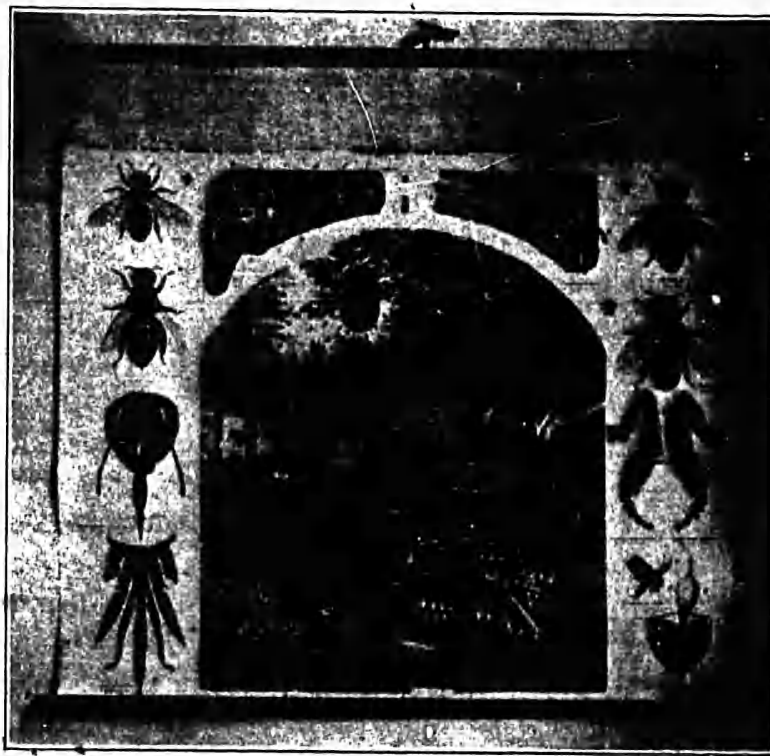
BRING THE WORLD TO THE CHILDREN

The second step in visual education, bringing the world to the child, is made possible by the presentation of objects, such as mounted specimens of the animal world, soil and industrial products, minerals, rocks, ores, and by motion pictures, lantern slides, stereographs, and photographs.

SELECTION OF MATERIALS

No material of this character should be brought into the school-room with the mere purpose of showing it to the children as something interesting and extraordinary to satisfy their curiosity. This is entertainment but not visual education. All illustrative material should be used in direct connection with a subject to be presented.

The specimens of mammals, birds, insects, etc., the minerals, the natural and manufactured products of a country, in geography, for instance, should be placed before the children to verify what they, under the teacher's guidance, have discovered through their own observation and reasoning as to the animal and vegetable life, the soil products, and the occupations of the people. The objects should be handled, observed, studied, compared with each other and with those that have been considered in connection with other countries, and should be generally discussed. The pupils should determine how the products before them affect the life of the people, their industries and commerce, their intercourse with other nations, their place among the nations, etc. Each child should take up one of the



WALL CHART SHOWING LIFE HISTORY OF THE HONEY BEE

articles, gather all the information he can regarding it, and present such information to the class. Only such objects and pictures as the teacher really needs for giving the children vivid, concrete images of what she desires to represent should be used.

A FEW TYPES OF ILLUSTRATIVE MATERIALS

If we could take our pupils to the cotton and rice fields, to copper, lead, and coal mines, to the mountains and the ocean, we could give them concrete impressions and interpreting ideas of much that they have to learn. Since we can not do this, the next best thing is to bring all these things to them—by means of soil and mine products which can be procured without much difficulty, and by means of well-selected pictorial representations.

Cotton.—By placing before the children specimens of cotton in the boll, unginned and ginned cotton, fabrics made from the lint, products of the seed, and good pictures representing the cotton cultivation and industry in all its stages of progress, we can take the children to the cotton fields, where they study the plant, the method of preparing the soil, and the harvesting; to the cotton gin, where the seed is separated from the lint; to the markets to see the baling and shipping; to the large cotton factories, where the lint is spun and woven into fabrics; and to the refineries to learn how cotton-seed oil, oil cake, cottolene, and soap are made. Such a lesson in cotton may be made a type lesson giving the children concrete impressions and first-hand experiences which will be of great advantage to them in the study of other materials for clothing.

Rice.—Specimens of rice on the plant, hulled, unhulled, of rice flour, rice starch, rice paper, and the pictures illustrating the cultivation of rice take the children into the rice fields of South Carolina, Nicaragua, Mexico, Japan, the Philippines, and Madagascar. These pictures show the children that the soil in which rice is grown is low and marshy. In some of the countries the rivers overflow their banks and cover the fields for miles. People actually sow the grains in the water, and when the floods go down the seeds sink into the soft mud at the bottom and spring up there. In the countries where the rivers do not help by overflowing, the people sow the seeds in trenches in spring and then flood the fields. After several days the water is allowed to drain off, and the little plants are seen peeping through the soft, wet mud. When they are about 4 inches above the ground, the water is again let in and allowed to cover the field for about two weeks. This flooding is repeated just before the grain ripens.

The specimens and pictures also tell how rice is harvested, hulled, bleached, packed, and sent to all parts of the world, and how rice flour, rice starch, and rice paper are made. The stereographs and slides acquaint the children with the people who are engaged in growing rice, with their manner of life, their homes, their state of civilization, etc. By means of the pictures the pupils gain some conception of the importance of a soil product which is used as food by more people than any other single product, and acquire valuable experience which will help them to understand better what they have to learn regarding other food products.

Birds.—The children know, as a rule, few of the birds they see around them every day. Through judicious study in the school-room of the mounted specimens of our feathered friends, we awaken the children's interest and encourage them to go to the parks, to field, and forest, and find the living birds in their proper surroundings, to hear their song, observe their food, how they build nests,

how they protect themselves, etc., and then give the results to teacher and classmates.

One of the best parts of such training is that it instills in the children love and respect for nature. A bird ceases to be a target for cruel stones when it is looked upon as a friend of man, and as the means of saving the park trees from insect pests.

Marble.—Some time ago the writer heard in a St. Louis school-room a lesson on marble quarrying. By means of a stereoscopic picture, of which each pupil had a copy, the children were transported into the mine, as it were, and under the tactful guidance of the teacher they found their way into everything the teacher wanted them to learn. In previous lessons the various classes of rocks had been studied and the order of deposition of the sedimentary rock



STUDYING ROCKS AND STRATIFICATION AFTER MUSEUM LESSON

had been noted. The children had brought in samples of sandstone, clay, and marble, and the collection of rocks furnished by the museum had been used to show the limestone in its various degrees of hardness, viz. ooze, coquina, coral, chalk, and marble. After studying the ways in which the rocks were placed in the ground, the class visited a sandstone quarry to observe the method of taking the sandstone from the earth. Then the method of quarrying marble was studied by means of a set of stereoscopic pictures, and the following outline used:

Location of quarry.

History of surface as read from picture.

Observation of the details of the picture: Discoloration, stratification, bedding, tunnels, water, pillars, method of drilling; Gadding machine, wedging and channelling machines, derricks.

Comparison with a mine.

The compositions written by the children on the subject of marble showed that they had thoroughly enjoyed their trip to the mine and had received valuable information and training. This is an effective type lesson for the study of other mine and quarry products.

Stereographs in physical geography.—Of seacoast, erosion, volcanic action, geysers, divides, canyons, falls and cataracts, of glaciers, of plains and deserts, no text or verbal description can give the children concepts clear and strong enough; nor can such concepts be given by the small, flat, illustrations in our textbooks. There are excellent stereographs, representing geographical features, which do not show flat photography, but supply double vision, giving three dimensions of a detailed diagram instead of two. The child, looking at a scene through the stereoscope, points not at places on the flat view, but at things and places far behind it, and when he looks into the depth of the landscape he sees them all in their proper proportion and true relation.

Industrial exhibits.—Teacher and pupils should visit industrial and commercial establishments so that they through their own observation may study conditions of labor and life. The number of such visits must of course be limited. Exhibits of many industrial products used in everyday life, each showing the development of an article in all the stages of progress, may be procured from commercial firms; for instance, exhibits of the pen point, the pencil, and the needle, rubber, cork, leather, glass, and other products. Few children ready to leave school have any idea of the great number of processes through which an object in daily use—the pencil, the needle, the shoe, or any similar article—has gone in its manufacture. They see only the finished product, and become accustomed to have millions of hands take care of them, without evincing any interest in those who thus serve them. “The children should be given some idea how much thought, how much care, how much labor have been expended on the smallest object in use in life. They should learn to follow the evolution of everyday objects, should learn to discover what wonders created by inventive minds and human industry their immediate environment contains, what exertion, and what amount of technical study are necessary to make the simplest utensils. We must teach the children to have greater respect not only for the wonders of nature but also for the wonders of human creation.”¹

ORGANIZATION AND THOUGHT DEVELOPMENT

After the material has been carefully selected and intelligently presented, we come to the most important, the essential process in visual education, the proper organization of the experiences gathered

¹A. Kolar, *Industrielle Erziehung*.

TEACHER AND CLASS IN THE MUSEUM CONTINUING STUDIES BEGUN IN THE SCHOOLROOM.



and the development of fundamental ideas in connection with the subject taught.

We must not forget that the use of illustrative material is after all only a means to an end. We must not lead the child to lean upon the concrete. He must be led to think away from the concrete and apply the experiences he has had and the ideas underlying them to other situations which will confront him. The right interpretations must be given. Abstractions must be made in due time in order to give the child the ability to find his way into the world and to adjust himself to his environment. The illustrative material must be so used as to cultivate the child's imagination and to awaken in him a desire to learn more about the world in which he lives and to give him the power to picture to himself materials, conditions, processes, and influences which we have no means of showing him in concrete form. Merely giving him an opportunity to see and to observe the material is satisfying his curiosity, entertaining him, but not educating him. Exposure to interesting materials and situations without development would be as profitless as it is in photography.

Otis Caldwell of Columbia College makes an interesting comparison. He says:

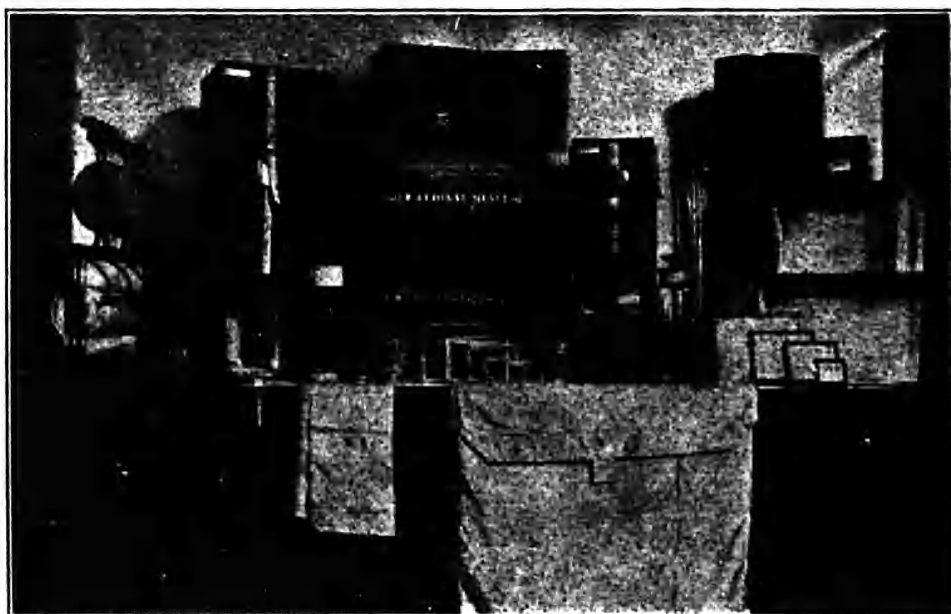
If a photographer were to expose his sensitive plates to a variety of situations without developing each situation upon a single plate, his work would be profitless. If more than one exposure is made upon a single sensitive plate and development then follows, a confused blur is the result. The successful photographer knows that proper exposure, followed by a proper amount of development, provides the only means of securing the clean cut permanent negative. If it is clear and satisfactory, new impressions may be taken at any future time. School work has dealt too largely with thought development which did not have adequate exposure.

Visual education must lead the child to think, to make his own discoveries, to draw his own conclusions, to apply what he has learned to related subjects by recalling the visual images that have been created, to desire to learn more, to understand, and to digest better what he learns. Only when this is accomplished is visual instruction entitled to a place in the curriculum of our schools.

EDUCATIONAL MUSEUM OF THE ST. LOUIS PUBLIC SCHOOLS

St. Louis has a well-defined system of visual education. Taking the children into the world through observation and study of things, processes, and conditions in the child's environment is becoming a regular part of our school life. Bringing the world to the child is made possible by the educational museum, which contains a wealth of material for the illustration of the work in the various subjects of the curriculum.

The St. Louis school museum is an integral part of our school system. Its material is a regular part of our school equipment and furnishes valuable tools for teaching and learning. The exhibits are not in glass cases under lock and key, but the 150,000 articles, arranged in 12,000 groups and collections, are in boxes, cases, glass jars, and bottles, ready at short notice to go to the schools. The museum does not wait for people to come and gaze at the wonderful things there gathered from all parts of the world. It is at work from morning till night every day of the school term, sending its material to the 3,000 schoolrooms to help to make the work of teachers and pupils more intelligible, enjoyable, and profitable, thus bringing the world to the schools.



MATERIALS USED IN PACKING AND TRANSPORTING MUSEUM COLLECTIONS

A MUSEUM ON WHEELS

The St. Louis museum is a traveling museum, a museum on wheels. The material is sent to the schools by large automobile trucks in the service of the museum. The schools are divided into five sections, each of which has a delivery day once a week. The principal of a school which has a delivery day on Monday asks his teachers on the preceding Friday to send him the number of all the collections in the museum catalogue which they will need for the illustration of their lessons during the following week. These he orders and on the following Monday the truck delivers the material at the school, taking back at the same time the collections used during the previous week.

CONTENTS OF THE MUSEUM

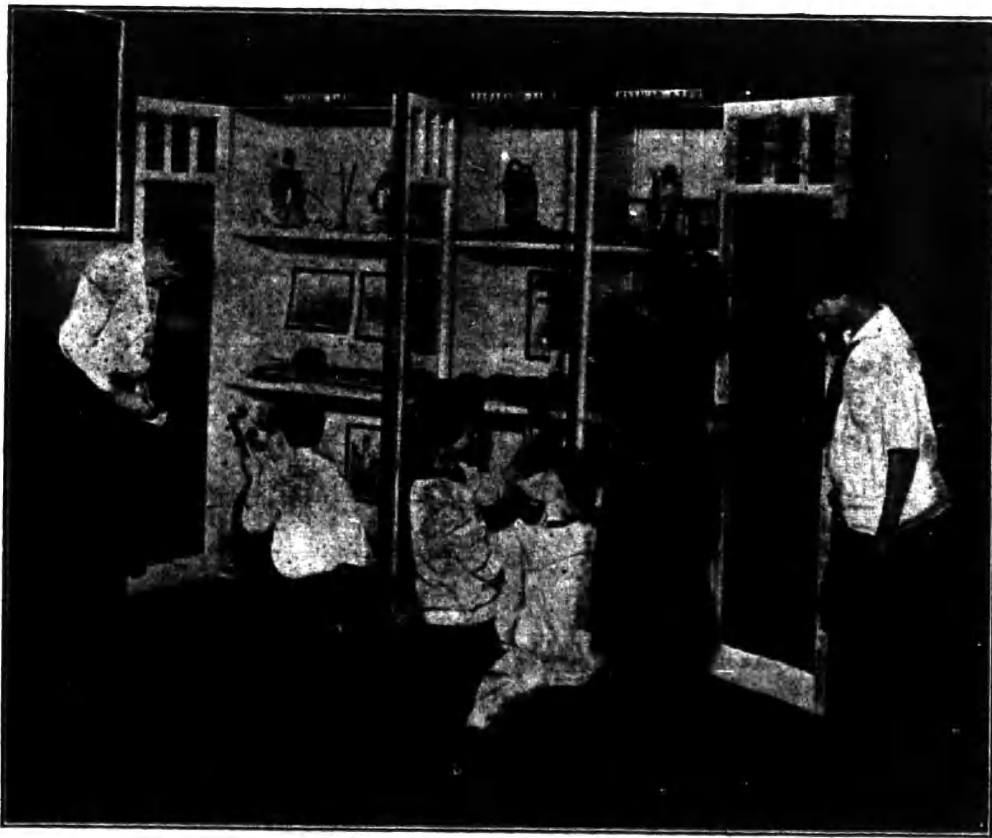
The material in the museum is arranged and grouped in accordance with the course of study followed in the schools. The following are some of the groups:

Food products.—These comprise the cereals in the plant and the grain, and their products; coffee, tea, sugar, cacao, in the various stages of production; spices, etc.

Materials for clothing.—The various animal and vegetable fibers of the world, and the fabrics made of them.

Tree products.—Domestic and foreign woods; rubber, gutta-percha, camphor, cork, etc., in all stages of preparation; materials for dyeing and tanning, etc.

Industrial products.—These illustrate the various stages in the manufacture of glass, paper, leather, ink, pencils, needles, etc., besides such products as are made from the materials mentioned in the former groups.



AFTER USING MUSEUM SPECIMENS IN THE SCHOOLROOM, PUPILS CONTINUE THEIR INVESTIGATIONS IN THE MUSEUM

Articles and models illustrating the life and occupations of the different peoples of the world.—Among these are implements, wearing apparel, models of houses, industrial products, etc. The animal world, mounted and dried specimens, and specimens in alcohol.

Plants, and models and charts of plants.

Minerals, rocks, and ores.

Apparatus for the illustration of physics and physical geography.

Musical and literary records for phonographs.

Charts, colored pictures, maps, and objects illustrating history.

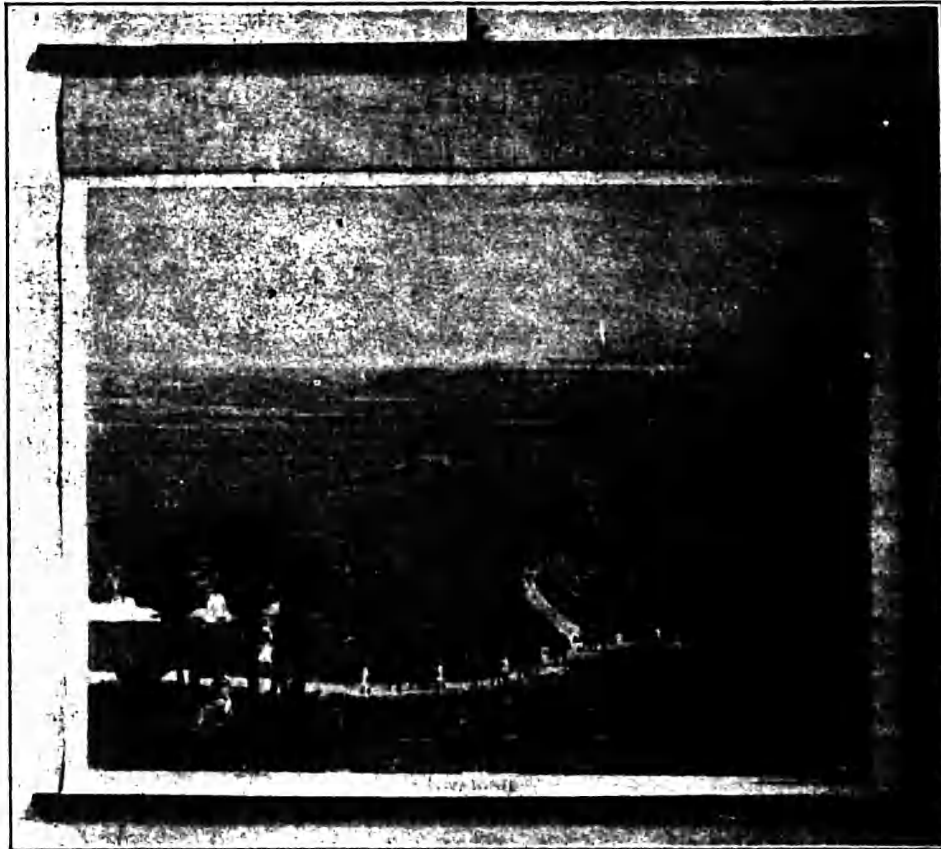
Charts, illustrating astronomy.

Charts, illustrating physiology.

Collections of art objects, and models used by the classes in drawing.

Classified collections of photographs, stereoscopic pictures, and lantern slides. These are intended to accompany the objects in the preceding groups.

A large library of motion-picture films. These are to supply the motion-picture machines which are in most of the St. Louis schools.



WALL CHART SHOWING THE SAHARA DESERT

These groups are subdivided into smaller sections, or collections of from 4 to 8 objects, each of which represents a class or family of the group; as, for instance, in the bird group, collections of wading birds, of owls, of finches, etc. Each collection is accompanied by a number of photographs, stereoscopic pictures, and lantern slides.

The collections are numbered and listed in the museum catalogue. With each article mentioned a brief explanation is given as to its use, where it is found, and other facts. At the head of each group a number of reference books are mentioned. These books are in the Teachers' Library; they give information about all the specimens in the group. Copies of the catalogue are on the desk of every teacher in the schools.

A FEW TYPICAL GROUPS AND COLLECTIONS

The following extract from the printed catalogue will show the principle according to which the material is arranged:

MATERIAL FOR CLOTHING AND SHELTER

Reference Books:

- Blaich, L. R.*—Three Industrial Nations.
Chisholm—Commercial Geography.
Hannan—Textile Fibers of Commerce.
Freeman and Chandler—The World's Commercial Products.
Lyde—Man and His Markets.
Toothaker—Commercial Raw Materials.
Very—Linen Industry.
Chamberlain—How We Are Clothed.

COTTON

Fibrous portion of fruits of cotton plant. Cotton most extensively used is that cultivated in the southern part of the United States, from Virginia to Texas. (1) Cotton bolls, Louisiana. (2) Cotton, unginned, Texas. (3) Cotton, ginned, Arkansas and Mexico. (4) Cotton seeds. (5) Cottonseed linters. (6) Miniature cotton bale.

Cotton of other countries.—(1) Sea-island cotton, West Indies. (2) Peruvian or Kidney cotton, Peru. (3) Silk cotton obtained from the Bombax or cotton tree, Honduras and Venezuela. (4) Pods of cotton tree, Philippine Islands.

Other cotton products.—(1) Cottonseed oil. Substitute for olive oil; also used for burning in lamps, soap making, and lubricating. (2) Cotton-oil cake. Used as cattle food and fertilizer. (3) Cottonseed meal. Ground cottonseed cake. (4) Cottonseed meal. Cattle food. (5) Cottonseed-oil soap and soap powder. (6) Cottolene. Cooking fat obtained from cottonseed oil. (7) Varieties of paper made from cotton stalks. The bark is separated from the stalk, carded and heckled, and changed into a pulp from which paper is made.

Manufacture of cotton.—Glass case showing the various stages of manufacture of cotton goods.

Implements used in cotton industry.—How human genius has been busy and successful in devising more adequate contrivances to produce better fabrics and to supply the demands of the world for cotton goods more rapidly is shown by a comparison of the primitive and crude implements used by the inhabitants of the Philippine Islands with the magnificent machinery in the large eastern factories as represented by the stereoscope and lantern slides.

Implements used in the manufacture of cotton in the Philippine Islands: (1) Model of cotton crusher; (2) model of spooling apparatus. Illustrations of cotton and cotton industry.

Pictorial illustrations: stereographs.—Stereoscope views, cotton industry of various countries. Cotton industry—15 copies of 1 view, "Cotton pickers in the field." Cotton industry—15 copies of 1 view, "Cotton on the levee at New Orleans."

Slides.—Additional illustrations of the cotton industry are offered by a well-selected collection of lantern slides. These slides may be used to great advantage when cotton raising is discussed in connection with the geography of the Southern States and the cotton industry in connection with the Eastern States. The collection consists of the following 17 slides:

(1) Map of United States, showing cotton area. (2) Among the cotton plants. Negroes in field. Louisiana. (3) Topsy among the cotton plants. Louisiana. Little colored girl. (4) Home of a cotton picker. Mississippi. One-story cabin. (5) Bringing in the cotton. Storing it in log house. Louisiana. (6) A cotton gin. Exterior of rude house. Boiler under shed. (7) Cotton-press yard. Cotton packed in bales. New Orleans, La. (8) Cotton at railroad station. Packed in bales. (9) Cotton levee. Ready for



WALL CHART SHOWING LINDEN TREE AND ITS PARTS

shipment. Ocean steamer. Mississippi River. New Orleans, La. (10) Cotton factory. Fall River, Mass. (iron mills). Steam power. (11) Cotton factory. Cotton house. Fall River, Mass. (12) Cotton factory. Rear. Covered bridge connecting buildings. Fall River, Mass. (13) Cotton factory, carding room (English cards). Fall River, Mass. (14) Cotton factory-carding room. Fall River, Mass. (15) Cotton factory-spinning room. Fall River, Mass. (16) Cotton factory-weaving room. Fall River, Mass. (17) Cotton ready for sale. Interior wholesale house, St. Louis.

FOOD PRODUCTS

Reference Books:

Adams—Commercial Geography.

Beal—Foods and Beverages.

Chamberlain—How We Are Fed.

Chisholm—Commercial Geography.

Freeman and Chandler—The World's Commercial Products.

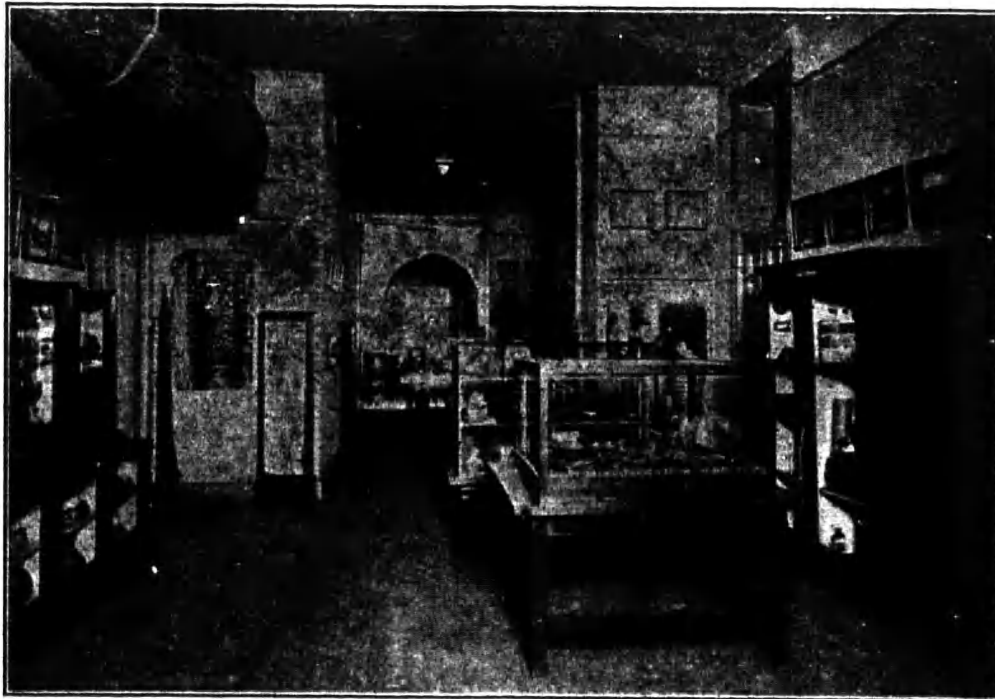
Lewis—Modern Industries.

Patton—The Teachers' Aid.

Toothaker—Commercial Raw Materials.

RICE

Cultivated in marshy lowlands throughout the Torrid Zone and in the Temperate Zones as far as the thirty-sixth degree of latitude. Staple food of greater number of people than any other grain. (1) Rice plant, Texas. (2)



A SECTION OF DISPLAY CORRIDOR OR "OPEN CATALOGUE"

Rice plant, Nicaragua. (3) Rice, unhulled, Madagascar. (4) Rice, hulled, South Carolina. (5) Rice, hulled and whitened, Mexico. (6) Glutinous rice, Slam.

Collections.—Rice products: (1) Rice flour, (2) rice starch, (3) wafers made from rice. Illustration of rice and rice fields.

Stereoscopic views: Various phases of the rice industry. Colored chart. The rice plant and its parts.

ANIMAL WORLD

Reference Books:

Hornaday—American Natural History.

Holtz—Nature Study.

Linville-Kelley—Textbook in General Zoology.

Parker-Haswell—Zoology.

Stone-Cram—Animals.

COLLECTIONS. MAMMALS: GNAWING ANIMALS.

Jack Rabbit.—Western United States and Canada. Largest of the rabbit family. Home beneath a clump or bush in the prairie. Feeds on vegetables, grass, and weeds. Flesh excellent.

Cottontail Rabbit.—Common in the United States. Digs its burrow in fields, groves, and meadows. Feeds on fruit, vegetables, grass, and weeds. Destructive to young trees by gnawing their bark. Flesh very good.

Guinea Pig.—Domesticated. Wild in the woods of Brazil and Paraguay, where it is called *Aperea*.

Red Squirrel.—Northern United States and Canada. Quarrelsome, noisy, and mischievous. Feeds on nuts, seeds of pine cones, corn, and vegetables.

Western Fox Squirrel.—Western United States. Largest of the squirrel family. Feeds on wild fruit, berries, pine cones, and corn. Less provident in preparing for the cold season.

Gray Squirrel.—United States. In hollow branches or trunk of trees. Feeds on fruits, nuts, seeds, and vegetables. Lays in store for winter.

Flying Squirrel.—A squirrel or squirrel-like animal having a fold of skin like a parachute along each side of the body by means of which it is enabled to make long flying leaps through the air.

Ground Squirrel or Striped Gopher.—Western United States and Canada. Lives in burrows on the prairies. Feeds on nuts and grain, of which large supplies are put away for the winter months. Uses cheek pouches to carry off food.

Franklin Spermophile or Gray Gopher.—Western United States and Canada. Burrows among thickets in sandy soil. Food and habits like those of striped gopher.

Pocket Gopher.—Mississippi Valley. Burrows in the ground. Lives in communities. Nocturnal. Large cheek pouches opening outside of the mouth. Feeds on roots and vegetables.

Western Chipmunk.—Western region of United States. Among the rocks of the western mountains. Digs burrows in ground, in which it hibernates. Feeds on seeds, grain, berries, grasshoppers, and sometimes robs birds' nests of their eggs.

Meadow Mouse or Prairie Vole.—Upper Mississippi Valley. Inhabits old and new hills or burrows of its own digging in the prairies. Feeds on nuts, acorns, and grain. Does great damage by gnawing at stalks of corn.

Muskrat.—Northern and central United States and Canada. Lives in shallow water, ponds, and river banks, using its vertically flattened tail for sculling. In fall constructs houses of rushes and mud. Feeds on roots, young shoots, and fresh-water mussels.

White-footed Deer Mouse.—Central United States, east of Rocky Mountains. Most beautiful of mice. In woods. Makes home in hollow roots and branches of trees. Lays up store of nuts, grain, and seeds for winter.

Common House Mouse.—Known everywhere.

Brown Rat.—A rodent of some of the larger species of the genus *Mus*.

Prairie Dog.—Western United States. Lives in colonies in burrows on the prairies. Feeds on grasses and roots.

Ground Hog or Woodchuck.—North America. Burrows in woods, prairies, and meadows. Feeds on roots and vegetables; especially fond of red clover. Hibernates. Peculiar superstition regarding its appearance on 2d of February.

Porcupine.—Southern Europe. Natural armor of defense formed of sharp stiff bristles which may grow to the length of a foot. Nocturnal. Hibernates in burrows.

COLLECTIONS—BLACKBIRDS AND ORIOLES

Migratory—Feed on fruits, seeds, and insects

Red-winged Blackbird.—Eastern North America. Winters in Southern States. Found in low bushes or reeds in marshes. Feeds on wild rice, seeds, and insects.

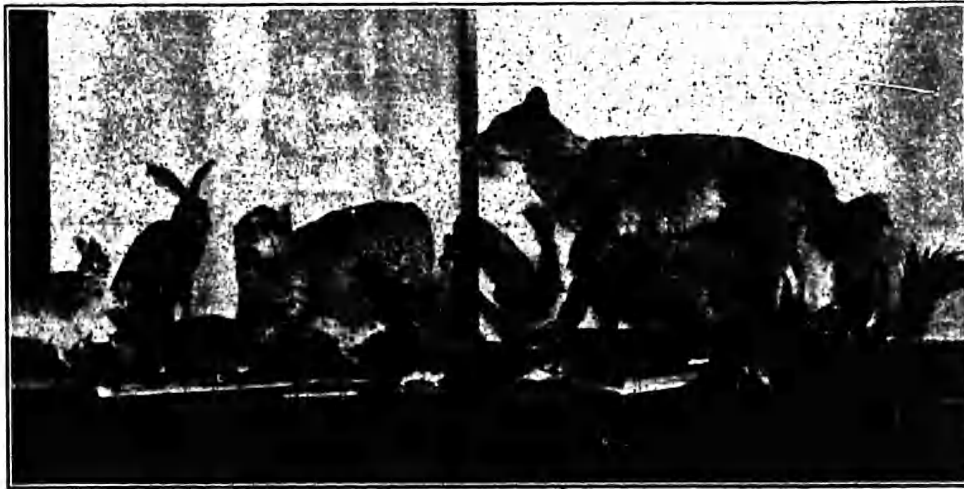
Yellow-headed Blackbird.—Western North America. Generally found in marshes, sometimes in company with cowbirds following cattle. No singer.

Bronzed Grackle.—United States. Winters in lower Mississippi Valley. Feeds upon seeds, particularly corn, eggs, and young birds.

Great-tailed Grackle.—British Columbia. Winters in Southern States. Found in prairies and bushy swamps.

Purple Grackle.—Gulf of Mexico to Labrador. Gregarious. Prefers dense pine forests. Feeds on grain, grasshoppers, young birds, and eggs.

Meadow Lark.—Eastern North America. Winters in Southern States. Terrestrial. Protectively colored. Migrates in flocks. Song bird.



A TYPICAL GROUP OF MOUNTED MAMMALS

Baltimore Oriole.—Eastern North America. Winters in Mexico and Central America. Feeds upon caterpillars and injurious insects. Highly prized for its beauty and song.

Orchard Oriole.—Common in temperate regions of the United States. Winters in Central America. In our orchards and about our homes. Much valued because of song, beauty, and insectivorous habits.

Bobolink.—Northern United States and Canada. Winters in eastern portion of Southern States and South America. Frequents open fields. Very injurious to rice fields.

Cowbirds.—From Mexico to British America. Winters in Central and Southern States. Walks about among cattle, picking up small insects disturbed by cows in grazing.

SPONGES

Reference Books:

Cooper—Animal Life in the Sea and on the Land.

Hartwig—The Sea and its Living Wonders.

Holtz—Nature Study.

Hyatt—Commercial and Other Sponges.

Live sponges consist of jellylike bodies united in a mass and supported by a framework of horny fibers and needle-shaped objects called spicules. Sponges

for domestic use come from the Red and Mediterranean Seas, the Bahamas, and Florida.

COLLECTIONS HORNY SPONGES

Include all our commercial forms. Skeleton consists of horny fibers. Generally found in a few fathoms of water, or some rock or coral bottom. (1) Grass sponge, coast of Florida; cheapest commercial sponge. (2) Anclote grass sponge, Gulf of Mexico. (3) Sheep's wool sponge, Florida. (4) Cuba velvet sponge, West Indies. (5) Hardhead sponge, Florida. (6) Hircina, Florida.

The variety of form in this species from the flat and spreading to the vase-shaped and branching forms is almost endless.

PHYSICAL GEOGRAPHY

EXPANSION BY FROST

Apparatus: Test tube, copper beaker, cork. Fill test tube full of water, cork securely. Put into the beaker some cracked ice and salt, one-third salt, two-thirds ice. Set test tube upright into freezing mixture, put beaker on newspaper on desk. Wrap beaker in a towel to exclude heat that would waste ice. What occurs as the water in test tube freezes? Have pupils seen sidewalks raised by frost in the wintertime?

ATMOSPHERIC MOISTURE

Apparatus: Two-ounce flask, cork, some ice water, some hot water. Fill flask with ice water, cork securely. Invert and let flask stand two or three minutes on desk. Let pupils note formation of dew. Whence came the dew? Now empty flask and refill with hot water. Repeat as before. Note that no dew is formed. On what does formation of dew depend? Will hot air or cold air hold moisture? If out of doors it is cold, try putting flask of ice water out of window. Let pupils see that cold air will not form dew in contact with cold flask. Warm air saturated with water will do so.

CLOUD FORMATION

Apparatus: Air pump, hand glass. Take hand glass furnished with air-pump apparatus and place it on the receiver of the air pump; moisten the hand in order to have a nearly saturated atmosphere in the hand glass and give a few quick strokes with the handle of the air pump. Under most circumstances a beautiful cloud will form at the receiver due to the expansion and consequent cooling of the air made by the rapid strokes of the air pump.

THE SEASONS

Apparatus: The tellurian. This can be used with profit to make clear to pupils the inclination of the earth's axis, the varying length of day and night, the difference of temperature between day and night, the succession of the seasons, the equinoxes, etc.

PHYSICS

For the illustration of elementary physics in the seventh and eighth grades, the museum furnishes the schools with the necessary apparatus. Iron, copper, and platinum wire, glass tubes, alcohol lamps and Bunsen burners, microscopes, sonometers, organ pipes, magnets, dry batteries, force and lifting pumps, air pumps, steam engines, etc., are sent to the schools upon requisition of the

principal. The catalogue gives descriptions of easy experiments to be performed by the pupils.

THE LEVER AND ITS USES

Apparatus: Simple lever, fitted with two weights. Test by putting weights at different distances, so as to balance in each. Prove that if load is farther from pivot (fulcrum), power must also be farther. Also, the contrary. Tell pupils several uses of lever, such as crowbar, scissors, poker, the forearm, etc.

SOLID EXPANSION BY HEAT

Apparatus: Copper ball and ring, alcohol lamp or Bunsen burner. Test cold ball and ring. Show that ball passes through ring. Now heat ball over lamp. Note how hot ball will no longer pass through cold ring. Why so? What has hap-



A TYPICAL COLLECTION OF APPARATUS FOR PHYSICAL EXPERIMENTS

pened to ball? Plunge ball into water to cool. Wipe dry. Now heat ring. Show that hot ring is a loose fit to ball. Why? Ask children if they have seen blacksmith put tire on wagon wheel. If so, get some one to tell how it was done.

LIFTING PUMP

Apparatus: Lifting pump, tumbler of water. Let pupils see the parts—suction pipe, cylinder, piston, piston rod and handle, suction valve, piston valve, spout. Ask them to watch working of pump, when suction pipe is put into tumbler and two or three strokes are made. Let some explain the use of each part. Can the pupils tell when the suction valve opens? Why? What is its use? When the piston valve opens? Why? What is its use?

MATERIAL WHICH MAY BE ORDERED FOR THE STUDY OF SOME OF THE COUNTRIES

As examples of what the teachers may order from the museum to illustrate the work in geography, the following exhibits may serve:

MEXICO

Food products.....	Sugar, coffee, black frijoles, tea, cocoa, vanilla, lentils, alfalfa.
Fibers.....	Jute, agave, sisal fibers.
Woods.....	Mahogany, ebony, rosewood, logwood, mora, laurel, guava.
Tree products.....	Rubber, tanning bark, dyestuffs.
Medicinal plants.....	Jalap, cascarilla, and others.
Birds.....	Motmot, Mexican trogon, cooperly tailed trogon, toucan, and others.
Minerals, rocks, and ores	Silver, gold, copper, iron, lead, tin, onyx, cinnabar, asphalt.
Sponges.	
Mexican life and history	Home implements, articles of dress and ornamentation, implements of war, idols.
Industrial products.	Pottery, vases, feather work, models of people following various occupations.
Photographs.....	Stereoscopic views and lantern slides.
Booklets.....	Illustrating the life of Mexico.

BRAZIL

Food products.....	Coffee, cacao, sugar, vanilla, mate tea, cassava, ginger, algarroba, attalea, and para nuts.
Fibers.....	Cotton, piassava, and agave fibers.
Tree products.....	Rubber, copal, ipecac.
Medicinal plants.	
Woods.....	Brazil wood, peroba, palisander, Palo d'Arco, guarabu.
Birds.....	Resplendent trogon, green trogon, parrots, yellow-throated toucan, pitta or ant thrush, chachalaca, and others.
Insects.....	Lanternfly, hercules, beetle, Brazilian bee, giant walking stick, coligo or owl butterfly, blue morpho, white morpho, thysania agrippina.
Reptiles.....	Iguana, basilisk.
Amphibia.....	Giant toad.
Life.....	Large colored chart—the tropical forest, photographs, stereoscopic views, lantern slides, and moving-picture films.

JAPAN

Food products.....	Rice, tea, spices.
Fibers and grasses.....	Silk, jute, hemp, ramie, bamboo.
Tree products.....	Camphor.
Woods.....	Sugi or Japanese cedar, Japanese hemlock, Kirri or Ironwood.
Birds.....	Green barbet, rose-ringed parakeet, Paradise fly catcher, myna or crested starling, drongo, gold bunting, rose and green finch, blue babbler, and others.
Minerals.....	Iron, copper, antimony.



A TYPICAL COLLECTION OF JAPANESE MATERIAL

Sponges.....	Venus flower basket, glass rope.
Clothing.....	Various articles of clothing worn by Japanese men, women, and children.
Education.....	School work of Japanese children; written compositions, drawings, and domestic art work; 143 large photographs showing school life in Japan.
Life in Japan.....	Photographs, stereoscopes, lantern slides, and moving-picture films.

MUSICAL AND LITERARY RECORDS FOR PHONOGRAPHS

Our schools have graphophones for which the museum furnishes musical and literary records. A total of 8,228 records were used last year.

STUDY EXHIBIT

A large part of the upper floor of the museum building and the entire corridor have been set aside for the display department. One or more collections of each group of material sent out by the museum are shown in proper sequence, following that of the catalog. These are the study exhibits or our open catalog. They enable the teacher to become thoroughly acquainted with all that the museum contains; they make it possible for the teacher to acquire, with the help of the reference library, such information as may be needed to use the material intelligently and profitably. No normal school or teachers college can give its students all the general information as to the different subjects of the curriculum which a modern teacher must possess in order to go far beyond the text of the book and make her work interesting and successful. A museum arranged in accordance with the course of study and supplied with a good reference library can do this. The St. Louis teachers make good use of these study exhibits and show no hesitancy in telling how the study and the use of material have widened their horizons, how much better they are prepared for their lessons, and how much more pleasure and satisfaction they find in their work.

The display rooms, however, do not constitute the museum. The museum proper, the traveling museum, is packed in thousands of boxes and cases, jars, and bottles, ready to go out to the schools.

CURRENT SCHOOL EXHIBITS

A large room in the museum building has been set aside for current displays of school work. The assistant superintendents and supervisors gather work of outstanding merit from the different grades of the elementary and high schools, the evening and continuation schools, and the special schools—written work, work in drawing, industrial work, manual training, domestic art and domestic science work—and exhibit it in this section. This gives princi-



A SAFETY FIRST VILLAGE PROJECTED BY PRIMARY PUPILS



STUDYING EXHIBITS OF PUPILS' WORK, ASSEMBLED IN THE MUSEUM

pals and teachers an opportunity to compare the work of other schools with their own.

THE TRAVELING LIBRARY

A new department in our school museum is the traveling school library. A large number of sets of supplementary books on the various school subjects have been placed in the museum, and sets of new supplementary books purchased every year are added to the collection. Sets of 30 of these books are sent to the schools upon the requisition of the principals. That the new department was welcomed by the teachers is shown by the fact that 124,320 books have been issued to the schools for periods of 5 or 10 weeks each. The different subjects represented and the number of books of each ordered by the teachers and delivered to the schools are shown in the following table:

Contents of the traveling library

Subject	Sets of 30 books each	Total books
Literature.....	2, 728	81, 840
Geography.....	196	5, 880
History.....	721	21, 630
Civics.....	40	1, 200
Science.....	117	3, 510
Music.....	3	90
Arithmetic.....	339	10, 170
Total.....	4, 144	124, 320

THE TEACHERS' LIBRARY

In connection with the educational museum, a teachers' library was opened in 1905. It contains the best publications on philosophy, psychology, education, school management, science, and literature, the textbooks used in our own and other countries, reports and courses of study of the schools of the United States and Europe, reference books giving information on all the material in the museum, and the leading educational and other magazines.

The teachers' library aims to put within the reach of the teachers all publications needed for professional study and self-culture. Principals and teachers cooperate with the board of education in making the institution as complete and efficient as it should be. They are asked to state what they would like to have added to the library, and their suggestions and wishes always meet with ready consideration.

There is a catalogue of the library in each school. The teacher may procure the books in two ways, by calling at the library to select the books she wishes to read, or by inserting the title of the

book or books in an order blank. The books desired are sent to her school by the museum automobiles in the same way in which museum material is sent. The board of education makes it easy for the teachers to avail themselves of the opportunities offered by the library, and these opportunities are most extensively used.

PHOTOGRAPHIC DEPARTMENT

The museum has a dark room and all apparatus necessary to take moving and still pictures.

All collections returned from the schools are unpacked, checked, and examined. Soiled or missing labels are at once replaced, dam-



MUSEUM DUPLICATOR AT WORK MAKING UP TRAVELING COLLECTIONS

CARE OF THE MATERIAL

aged articles sent to the repair room, and all glass and boxes and cases carefully cleaned. Two men repack all the material, and make it ready to go out again. The boxes and other receptacles for the various articles are all so constructed as to give the best protection and to keep the exhibits in usable shape as long as possible. The teachers and pupils seem to place the proper value upon the museum material. They seem to feel that they are responsible for its care and preservation, and they show commendable care in handling it. The annual loss of exhibit material has been comparatively small.

WORKING STAFF

The educational museum is in the administrative charge of an assistant superintendent, the working staff consisting of a curator,

assistant curator, and office assistant, who are three ex-teachers of experience in the various school grades, a chief clerk, a stenographer, a duplicator, a librarian and assistant, a photographer, a repair man, a checker, two packers, and two chauffeurs.

REPORT ON CIRCULATION

The museum's two large automobile delivery trucks are kept constantly busy supplying the teachers' orders for museum material and supplementary text and reference books. The following extract from the statistical report of the educational museum may prove interesting and illuminating in that it shows the nature of material and books ordered during 1923-24:

Circulation of the educational museum, 1923-24

Nature of material	Number of collections ordered	Total number of objects
Food products	4, 507	90, 140
Material for clothing and shelter	2, 661	53, 220
Mounted mammals	3, 268	3, 268
Reptiles, amphibia, and sea life	1, 395	9, 765
Mounted birds	9, 281	9, 281
Insects and their near relatives	512	5, 120
Minerals	1, 095	10, 950
Collections showing lives of peoples	1, 832	36, 640
Stereoscopic views	12, 381	185, 715
Large colored charts	12, 334	12, 334
Photographs and illustrative booklets	4, 606	92, 120
Lantern-slide lessons	3, 740	93, 500
Apparatus for physical experiments	903	5, 418
Phonograph records	8, 228	8, 228
Moving-picture films	2, 812	2, 812
Total	69, 555	615, 011

Cost of maintenance, 1923-24

	Expenditures	Appropriations
Salaries	\$19, 420	\$21, 500
Delivery service	872	2, 000
Duplicate material	1, 200	4, 000
Permanent equipment	600	
Perishable equipment	83	
Postage	42	
Car fare for lantern slides and moving pictures	60	
Gas and electric light and power	100	
Fire extinguishers	42	
Total	22, 398	27, 500

The annual expense per pupil is 27½ cents.

THE MUSEUM IN ITS NEW HOME

The educational museum, at its opening, was housed in some of the rooms of the Wyman School and adjoining the teachers college, and remained in these quarters for seven years. It was then transferred to the building in which the Peabody School had been located, after part of this building had been reconstructed.

In 1921 the institution moved into its permanent home, the building in which the pupils of the Bates School had been housed.



READY PACKED GROUPS OF CIRCULATING MATERIALS

The whole building was so remodeled as to make it a suitable home for the museum. The new building is more centrally located and affords better facilities for housing the constantly growing institution than the former quarters.

The eight large well-lighted rooms and the unusually wide corridors of the first floor furnish an ideal location for the 12,000 museum collections ready for circulation in the schools, the traveling library, the checking and packing rooms, and other offices. The second floor, equally large and well lighted, presents excellent facilities for displaying the study exhibits, the teachers' library, exhibits of school work, the duplicating and repair work, and furnishes a well-equipped assembly room seating several hundreds of pupils and teachers.

ESTABLISHMENT OF A SCHOOL MUSEUM

In cities in which there is a public museum, opportunities for systematic use of its material should be given the schools. The city museum should establish a school section; it should gather from its stores such material as can and should be used in the schools and make it possible for the teachers to get it when they need it. This would benefit the museum as much as the schools. The number of people who visit the great storehouses of knowledge in the large cities is deplorably small. The boys and girls who are trained in the schools to use museum material will, when they have become men and women, visit the museums often and will make the most intelligent use of the opportunities they offer.

But even in places where there is no public museum, the establishment of a school museum is not as difficult a matter as it is generally supposed to be. A great deal of the material in daily use in the St. Louis schools can be had from commercial firms in the city and in other places, much of it for the asking. The United States Department of Agriculture and Forestry supplied us with plants, tubers, woods, tree products, and descriptive literature, and the National Museum in Washington with minerals and fossils. Owners of mines and quarries all over the country sent us minerals, rock, and ores. Commercial firms in the United States and abroad presented to the museum natural and industrial products, such as cotton, wool, silk, flax, hemp, jute, coffee, tea, cacao, the various spices, rubber, cork, glass, aluminum, carborundum, etc., and exhibits showing the various stages in their development. Teachers and pupils and friends of the schools have contributed large amounts of valuable material and are still doing so. A number of merchants who make trips to foreign countries never forget to bring or send to us materials which we could procure in no other way. Pictures gathered from magazines and railroad and steamship advertisements may be arranged and classified.

The boards of trade in all the large cities of the world publish richly illustrated pamphlets which give most valuable information as to everything the child should learn concerning the countries in which those cities are located. The St. Louis Educational Museum has a large number of sets of such pamphlets.

OPINIONS OF PRINCIPALS IN THE ST. LOUIS SCHOOLS

The writer feels that, in order to give the reader an adequate idea of the value of our school museum, he should not only present his own opinion but should add the opinions of men and women who do the work in the schools and who have the best opportunity to test the value of this method of visual education.

A number of principals of our schools were asked to state what they thought of the museum as an adjunct to our schools. The following are extracts from their letters:

One of the strongest influences for the vitalization of instruction in the St. Louis public schools has been our educational museum. Born of the Louisiana Purchase Exposition (itself a great project in visual education), at a time when our system was becoming dissatisfied with the degree of formalism and literalism in the methods then used, the museum has ever since been a stimulus to teachers and pupils alike. For 20 years it has been a source of information beyond that afforded by the textbooks and a constant check against the tendency to learn the text in a more or less insincere way. The philosophy underlying the use of museum materials in school work ought not to require any argument. We constantly learn from objective material everywhere else, but in school the exclusive use of print makes a strong appeal to the routine type of teacher always with us. Besides, the museum costs money; it has its limitations; it needs skillful use as well as constant repair and replenishment—but it is as necessary to-day as the telephone. Like the telephone, it saves time in developing ideas and makes possible a lot of ideas which without it would probably never be born at all. Some day I trust a name will be invented for the circulating museum which will connote less of the dead past and more of the throbbing life of the present.

No longer is it necessary to consult the consensus of opinion as to the values of a school museum. Some very recent publications of scientific investigations made in the field of visualized education confirms the belief in the values of visual education.

Visual education is not new. We are thinking of it in the broad sense of the term. It leads us into the details of the teaching of all of the subjects of the school. It represents a grouping of educational materials and devices based upon methods of presentation and not upon subject matter. With this idea of a school museum, its values can not be questioned.

Teachers of various school subjects have developed materials and forms of visual presentation to be used in teaching their subjects. These materials, to be made to function in the highest degree, must be centralized, for two reasons. First, because the cost of such material makes it impossible to provide it for each individual school building. Second, that the use of this material may be efficiently supervised. For this reason, the big museum must be developed in place of small collections of materials in individual schools. In this museum is found all forms of material used in visual education and its values are inestimable.

This is what the St. Louis School Museum means to our public-school system as I view it.

I have been a great user of the museum. Not a week has passed in many years that my school has not placed a considerable order for various groups of illustrative material from this institution. It renders an invaluable service to the schools.

The displays in the cotton and corn industries, showing the growth of the product from its inception to the finished product and showing the various by-products made from each of these plants, are of the highest value. These are accompanied by stereoscopic views giving the "Mimic Snow of the Cotton Field," concrete illustrations that many children could see nowhere else.

The museum collection of bird life is remarkable in its variety and extent and gives delightful hours of nature study to many groups of city children. The acquaintance which the average city child has with the bird life of the world, or even that which formerly was common in his own habitat, is very meager. These excellent and well prepared and preserved specimens from the museum add vastly to the work which the average teacher may accomplish in the nature hour and in the geography period. These stuffed specimens include not only common types from the child's own habitat but also rare specimens from regions which he never visits.

The moving-picture section—including a machine and a catalogue of films—is in constant demand and is doing a large work. We have used the machine here in our school a number of times and have secured desirable educational films. It is well known to-day that vast numbers of films exhibited to the world are not proper subjects for schools or for children on any occasion. Problem plays and other features are constantly exposed that should not be forced upon the attention of young people at all. The museum renders a service in collecting a supply of films that have real educational value; that are entertaining in a legitimate way but are free from objectionable and immoral suggestions. Many schools are still unable to purchase a machine and a repertory of films with their own funds and find this assistance from the museum exceedingly valuable.

One of the great services of the public-school museum is its power of suggestions to teachers as to how to make lessons and subjects interesting and to add to the verbal information of the book. Many teachers follow this lead in gathering together a small collection of their own in connection with reading and travel. These, however, can never take the place of the larger museum, because our schools have not the room nor have the teachers the funds available for building up a large collection. By putting a large museum "on wheels" and sending it around the city, the public-school museum makes available all the wisdom of years, the expert knowledge of collectors and students of various subjects, and the benefits of a central fund which the board of education appropriates for this purpose.

We use the museum extensively, and it aids in motivating our work. We find excursions rather hard to conduct, and the museum materials are often just as effective. Visual education, through such an institution as the museum, should be classed with the invention of printing so far as influence upon education is concerned. Printing brings ideas through the stereotyped page, visual education through the objects themselves or their representation. We are now placing more emphasis upon visual education.

At our school we are giving much thought and attention to means and methods by which we can save our pupils from humdrum, deadening types of work. We want work to mean enthusiasm and joy of living as well as information and skill. We have watched with great pleasure the improvement in attitude toward work and government, the improvement in quality of work, the increase in efficiency, and the development of happiness that have come to our pupils and our teachers as socialization, attention to individuals

and groups, according to their peculiarities and their needs—use of visual material of many types—visits to places of geographic, historical, industrial, and civic interest, contact with actual people and mingling in actual situations and handling of actual material—correlation of certain school and community efforts for educational purposes—have taken on more and more nearly their right function with us. We use a very large amount of material from the educational museum.

Yes; we use the museum material regularly. It is invaluable, especially to city children. I have only one criticism. In numbers most commonly used, we need 10 times the duplicates we now have. A teacher plans her work a week ahead, sends for the material and it does not come, or a substitute may be sent which does not fit into the continuity of the subject or which she may have previously used. By all means, increase museum facilities in every line.

For many years we have received a free weekly delivery from the educational museum, and our teachers have thus had brought into their classrooms materials from various parts of the world, according to the geography-lesson suggestions. Thus the data of whatever country was being studied in the abstract was being supplemented by concrete products from that part of the world—mounted animals, birds, specimens of foreign vegetation, handiwork, and a rich variety of articles too numerous to mention. All these have been placed in the hands of the pupils who have absorbed their content with interest that has never flagged.

A prominent feature of this museum material which has helped to make geography a living thing is the use of the lantern slides; they serve to transport the children in imagination to remote parts of the earth, a form of recreation which is ever fresh and interesting as well as instructive. After a lesson on some distant region, illustrated by a variety of specimens which may be handled, the class can go to a darkened room and there have apparently brought to their gaze the cities, landscape, architecture, real life, and occupation of the people they have been studying, and which next to real travel produce the most vivid impressions. In this way we have a happy blending of the theoretical and the practical, where interest stimulates effort and work becomes play.

We make extensive use of the visual wealth of the educational museum because it saves us much time by putting over many mental images and impregnates the force of instruction. Word pictures may be ever so skillfully put, yet few minds can convert words into pictures as rapidly as the concrete object is able to suggest them.

Our catalogue of slides, films, stereoscopes, and pictures works well into our course of study in history, geography, science, language, reading, and art. The opportunity to hold in one's own hand the object you seek to describe has made many language lessons more comfortable both for the teacher and pupil.

The museum would be one of the last agencies for the enlivening and reinforcement of instruction we should be willing to do without.

The public-school museum increases in educational value every year. I believe that all children are so constituted as to get facts more vividly when the presentation of these facts is supplemented with material that is tangible and visible. But there is a type of child now in our schools who formerly dropped out in the lower grades. He is the child who does not learn well through academic methods of instruction. That is the greatest reason why in former years he did not remain in school. If we are to do justice by this type of child we must stress visual education.

Since it is one of the peculiar missions of the junior high school to encourage boys and girls to continue their education, we in this institution greatly appreciate the museum and hope for its extension.

Last year the school over which I presided as principal used 2,471 museum collections. This fact alone is evidence of my appreciation of their value. The departmental teacher of geography, who used more of the collections than any other teacher in the city, expressed her evaluation of them as follows:

"The use of museum material helps to make the teaching of geography vivid, picturesque, and exact. It gives opportunity for thoughtful work, and it stimulates investigation. It encourages the collecting instinct and brings the outside world into closer connection with the school activities.

"The discussions occasioned by the use of this material bring in a large amount of incidental learning. Because of these values, the use of museum material helps to establish a permanent geographic interest."

Museum collections in my school are not only interesting, they are exceedingly helpful to pupils in gaining many ideas that otherwise would be difficult, if not impossible, to get. Without them, children would fail in many instances through lack of adequate experience to secure the right imagery.

Without illustrative material, geography instruction is apt to degenerate into mere verbalism. Pupils will talk glibly about the silk industry in words conned from the text, and yet when shown a silkworm cocoon or a skein of raw silk they fail to recognize either as the things they have just described.

It is in this respect that much of our geography instruction fails in attaining its main objective, that of acquainting the child with the fundamental aspects of the world. The teacher often fondly supposes that a mere discussion based on the text and a subsequent parroting of words conveys to the child as clear a concept of the matter as that which the teacher may have gained with her background of varied experiences. A picture or a specimen will speak the proverbial volumes to a pupil, where an ocean of words would have but a stupefying effect. All the words in the dictionary can not picture to the mind of a child the nature and appearance of a cotton boll as effectively as the thing itself. Since the child can not go to the world, bring the world to the child—at least as much of it as is available under the conditions.

* Without the educational museum our geography instruction would not be successful. Our teachers know the value of this institution and appreciate its service. Every Wednesday the museum truck stops at our door and delivers the material for the week. A class studying the lumbering industry is supplied with specimens of different kinds of wood and a film depicting a Minnesota lumber camp and its activities. Another group is engrossed in the life of

Japan, and a box filled with quaint costumes and other articles of dress, together with a number of wall pictures, helps them to gain a clearer conception of the inhabitants of that far-off country. Stuffed specimens of our fur-bearing animals, beaver, marten, muskrat, mink, etc., form the basis of a study of the fur trade conducted by a third class of pupils. There is scarcely any phase of geography instruction that can not be vitalized by the wealth of material placed at our disposal by the educational museum.

But its usefulness is not confined to this subject alone. Nature study, drawing, literature, music, all claim their share of illustrative material from its shelves. Recently members of a class in current events were discussing the patriotic fervor of the French. A phonograph record of Schumann's "Two Grenadiers" told them in martial strains of the burning love these two old veterans felt for their country and their great leader in a far more impressive way than could any mere discussion. The vivid artistry of butterfly wings in the mounted specimens obtained from the museum aided another group in selecting proper color combinations for their designs. The reading of "The Legend of Sleepy Hollow" was rendered doubly interesting to another class by a film showing scenes along the Hudson described in the story. Primary children making a cutting of a mounted rabbit, a nature study group verifying from stuffed specimens the birds they had observed on an excursion to Forest Park, and other illustrations without number could be mentioned further to complete the picture of what the museum means to our pupils. May its usefulness never grow less.