State Normal School of Colorado

THE MUSEUMS

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State Normal School of Colorado

Museum Bulletin

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Museum Bulletin.

The work of the State Normal School of Colorado is organized about four centers of thought, information and inspiration, viz: the *field*, the *museum*, the *library*, and the *laboratory*.

By the field work is meant excursions in nature study and science into the field—the school garden, the school nursery, visitations to industrial enterprises in the community, to enlarge the vision in industrial history and geografy, the taking of classes to business places—banks, town council meetings, court houses, etc., to give a conception of the business relations of the people and also a view of civic and governmental management, to take the students to historic points of interest that they may the more nearly come in touch with the concrete life of the past. By laboratory is meant a working place where the pupil attacks a problem in any subject and seeks a solution by means of experiment thru the use of apparatus. By library is meant a working room filled with books, where the student may be able to find all the literature necessary to illuminate the subject being studied—a place where merely to be is an inspiration and stimulation for information, refinement and enlargement of mental vision. The museum, the subject of this bulletin, is the collection, determination and classification of specimens for the study of subjects, being represented by objects and pictures. In botany there is a classified concentration of the flora of the district, country or the world. In zoology there is a graduated series in animal life with its likenesses and differences, arranged for study and instruction; all

these specimens, as a rule, that they may be more effectiv, have been given an artistic setting, that not only the student may find them useful for study, but that the layman may find them inspiring and instructiv. In the geografical museum is the world in miniature in its physical and humanistic productions and characteristics—a collecting together of the results of the forces of nature as they operate upon the crust of the earth, and the products of the earth's surface as modified by man's influence while living in the midst of them,—this concentration of the forces of nature, as modified by man, gives a pupil at a certain stage of his development a conception of the earth as the home of man. In the museum of economic botany, which embraces school garden, the nursery, elementary agriculture and landscape architecture, is an excellent place to exhibit the relations of soil to our economic life. In the historical and anthropological museum there are collected sets of industrial products showing the present life of the people, also collections representing the past life of the people—collections of busts and pictures which give an expression of the sentiments and activities of the people that have been and of the people that are. In the domestic science museum collections of food stuffs, implements and utensils that were used by peoples in the past and are used by people at present. In the textil museum all of different fibers from the raw material up to the finished products in their many different lines, together with looms and pictures of weaving of primitiv man, as well as man at the present time are well arranged. In the English and literary museum there are collections showing the evo-

lution of books directly concerned in English, also old illustrated editions of the great literary characters, plastic art forms in plaster and marble to illustrate the great pieces of literature, together with many pictures. In the dramatic museum pictures of great dramatists, grouped according to country and power, the evolution of the reader, the evolution of the drama, together with pictures and models of great theaters, plays and characters are found. In the classical museum copies of the old Greek and Roman writers, and old classic pieces of statuary of them, bas-reliefs, showing the activities of the people during the classical times, etc., are installed. In the modern language museum there are found charts, portraits, pictures and models showing the habits, customs and life of the people whose language and literature is being taught in the department. In the psychological museum are found collections of the brains of all the mammalians in graduated series, also the evolution of the brain from the simple cell up to the brain of the modern man, together with old books on psychology and physiology, old charts, apparatus for experiment, charts for showing reactions, etc. In the museums of the lower forms of life in the biological department there are many specimens of mollusks, insects, reptils, starfishes and life histories well classified and well set to instruct and inspire the student of natural history. In the museum of manual training are collected and classified woods from all the states and all the countries of the world, micrografs of all the woods of North America, lantern slides, showing the tissues of woods, the evolution of tools, pictures of furniture of the different stages of develop-

ment of the human family, together with collections of modern furniture, carvings and the work of different schools from the different countries of the world. The pedagogical museum has collections of furniture, apparatus and the evolution of the text-books from the old New England primer up to the splendid editions we have now, together with many pictures to illustrate all the lines of activity in the pedagogical department. In the art museum there are collections of statuary, pictures, lantern slides, ceramics, etc., to illustrate the work of art and esthetic values in life as it has been exprest in artistic form. In the ceramic museum there are over two thousand specimens from all parts of the world, series showing the evolution of an individual vase, of a piece of terra cotta, of the tile, of the brick, of the drain pipes, from the crude clay up to the finisht products; where original pieces cannot be got, replicas are obtained so that the ceramic museum shows the life of civilization.

Every department in the institution has connected with it a working museum growing out of the work and back into it. Any department may use the museum of any other department under the proper regulations; this correlates the museum work.

Purpose of a Museum.

1. The general purpose of a museum is information and inspiration. It is a place to gain information and inspiration about nature and the products and activities of people.

2. The particular purpose of a museum is to help in the solution of problems that arise in school and in life; it should give a larger vision of the lesson and a clearer vision of the activities of life.

3. A museum is to concentrate the objects of a particular subject into small compass, the better to give a concrete grasp of the whole field of the particular inquiry.

4. The purpose of a museum has in it an element of entertainment; in all good teaching there is in it an element of inspiration — providence — entertainment. Teaching is at its best if the interest is keen enough to occasion the above.

5. One of the main functions of a museum is its arrangement for research work; not necessarily that something unknown to man is to be found out, but something that is previously unknown to the pupil or student is found out.

6. The museum becomes purposeful just as it brings into classified form the products of matter, life and mind in an orderly whole so as to reveal the universe of things in its unity.

The Value of a Museum.

The educational value of a museum is inestimable. It is valuable in leading the pupil to see the relations of forces in producing things of matter, life and mind; this is making activ the thinking powers. The modern museum lays stress on the artistic setting of natural ob-

jects; this stimulates and enlarges the esthetic sentiments. It also leads a pupil to be a doer; it tends to make him dynamic in his work; this develops the pragmatic side of his life.

The development of many subjects of vast importance in life has been largely thru the use of museums. The ancients and all civilized peoples have created museums; the large cities of all countries expend sums of money in their museums; all because of their educational value.

Commercial and industrial museums show the growth of the agricultural and mauufacturing activities. The historic development of implements, utensils, arms, apparel, government and activities of all kinds show the growth of civilization better than lectures and books. The historic evolution of the plow from the one made of a stick to the splendid steam gang-plow shows the development of life in the concrete better than in any other way. Objects and pictures show the civic and social life of all time in a manner better than books.

There is a growing sentiment for the museum in this country. A good illustration of a useful museum is the Commercial Museum of Philadelphia, Penn. It was developt and is growing for the purpose of commercial and industrial advantage to the interests of this country and particularly of Philadelphia and Pennsylvania. The legislature appropriated $50,000 for the purpose of having this museum send suitable museums out to the schools of the state, that the children might see and study the products of the world.

Every school from the rural district to the university

should have a museum—a growing museum—one in which the children and the patrons have an abiding interest.

Organization of Museums.

I. CLASSIFICATION OF MUSEUMS.

A. PHYSICAL MUSEUMS:—This includes all museums dealing with inorganic matter, as museums of chemistry, of physics, of geology, of mineralogy, of geografy, etc.

B. BIOLOGICAL MUSEUMS:—This includes all museums dealing with organic life, as museums of birds, of mammals, of reptils, of fishes, of radiates, of mollusks, of insects, of botany, of economic botany, of histology, of physiology, etc.

C. ANTHROPOLOGICAL MUSEUMS:—This includes all museums growing out of the activities of man, as museums of psychology, of sociology, of history, of English and literature, of reading, of dramatic expression, of classical antiquity, of modern languages, of pedagogy, of textils, of domestic science, of manual training, of physical education, of mathematics, of art, of ceramics, of music, etc.

The above classification is only for the purpose of convenience and does not in the work interfere with the unification of all the museums. The great aim in all the work is to show the unity of this universe of things.

II. DIVISION OF WORK.

1. Z. X. Snyder, Ph. D., President,
   Director of all Museums.
2. W. G. Chambers, A. E. Beardsley and F. L. Abbott,
   Managers of Anthropological, Biological and Physical Museums respectivly.
3. L. A. Adams, M. S.,
   Curator of Museum of Birds and Mammals.

   H. W. Hochbaum, B. S. A.,
   Curator of Museum of Economic Botany—School Garden, Forestry, Elementary Agriculture, Nature Study.

   Eleanor Wilkinson,
   Curator of Museums of Textils and of Foods and Household Utensils.

   David Douglas Hugh, A. M.,
   Curator of Museum of Pedagogy.

   Zachariah Xenophon Snyder, Ph. D.,
   Curator of Museum of Ceramics.

   Samuel Milo Hadden, Pd. B., A. B.,
   Curator of Museum of Manual Training.

   George Washington Barrett, M. D.,
   Curator of Museum of Physical Education.

   Albert Frank Carter, M. S.,
   Curator Museum of Library.

   Will Grant Chambers, A. M. and M. S.,
   Curator of Museum of Psychology.

   William Kennedy Stiffey,
   Curator of Museum of Music.

   Frances Tobey, B. S.,
   Curator of Museum of Reading and Dramatic Interpretation.

   Louise Morris Hannum, Ph. D.,
   Curator of Museum of English and Literature.

Gurdon Ranson Miller, Ph. B.,
Curator of Museum of History and Anthropology.

James Harvey Hays, A. M.,
Curator of Museum of Classical Antiquity.

Richard Ernesti,
Curator of Museum of Art.

Arthur Eugene Beardsley, M. S.,
Curator of Museum of Mollusks, of Insects, of Fishes, of Reptils, of Radiates.

Francis Lorenzo Abbott, B. S.,
Curator of Museum of Geology, of Mineralogy, of Chemistry, of Physics, of Geografy.

Abram Gideon, Ph. D.,
Curator of Museum of Modern Languages.

George Bruce Halsted, B. A., M. A., Ph. D., F. R. A. S.,
Curator of Museum of Mathematics.

4. R. W. Bullock, Charles Waddle, Elizabeth Kendel, Bella B. Sibley, Dora Ladd, E. Maud Cannell, Alice N. Krackowizer, E. D. Randolph, Achsa Parker, E. A. Cross, Marshall Pancoast,
Assistant Curators in their departments.

5. G. R. Miller, Ph. B., A. E. Beardsley, M. S., D. D. Hugh, A. M., S. M. Hadden, A. B., H. W. Hochbaum, B. S. A., and Achsa Parker, A. M.,
Committee of Museums.

III. FUNCTIONS OF DIFFERENT WORKERS IN MUSEUMS.

1. DIRECTOR:—The function of the director is:—
   a. The general direction of all the museums.
   b. To give suggestions as to plans and methods of management.

c. To help obtain material upon the recommendation of the managers and curators.

2. MANAGERS:—The function of the managers is to have general charge of all the museums that belong to classes A, B and C, to unify them, to be curators of their particular museum or museums, and to collect material.

3. CURATORS:—Each curator is to have immediate charge of his museum. He is responsible for the growth and use of the museum under his charge, the installation of specimens and the amount of interest taken in it as an educational factor by the students in his classes.

4. ASSISTANT CURATORS:—The assistant curators help the curators to perform the work of their respective museums.

5. MUSEUM COMMITTEE:—The work of this committee is to receive all museum invoices, distribute the specimens to the different museums and assist the managers and curators to install them properly.

Technical Management of Museums.

The technical management of museums involves considerable care and labor. Patience and accuracy are the important factors. It takes labor to collect, classify and place the material.

I. THE FOLLOWING IS THE ROUTE OF A SPECIMEN FROM BEGINNING TO END.

1. To collect it.
2. To apportion it by committee to proper museum in accordance with regulations governing committee.
3. To accession it in accession book.
4. To install specimen in proper place in museum and label it.
5. To fill out preliminary card by curator of museum and deliver it to typewriter of museums.
6. To make typewritten cards precisely like the preliminary card.
7. To deliver one card to the curator from which the preliminary card came and to place the other one in the general museum cabinet in the library.
8. To put data on the card together with some other data in a register expressly prepared for the purpose.

II. REGULATIONS.

1. No specimen is allowed to be taken from the museum without the permission of the curator and never to be taken from the building without the permission of the director; and when taken in accordance with this regulation, it must be returned as soon as it has been used, and carefully put in its place.
2. No museum specimen is to be used except for teaching purposes in classes, lectures and

study. They are not to be used in plays and for theatrical purposes.

Organize a Museum in Your School.

The way to organize a museum is to organize it. Commence to collect, to beg, to purchase and to solicit deposits. At once label the specimens and arrange them effectivly.

The State Normal School is glad to assist any school in the organization and building of a museum. It will give suggestions and instructions in various directions that are helpful. It hopes later to be able to make exchanges with schools, the schools exchanging what is in their communities for what is in other communities. The Normal School will become a sort of exchange.

Location of Museum.

Each museum is located, when possible, in the class room. This is for the purpose of making it convenient to be used in the recitation. As a rule, museums are too isolated to be most useful. They are locked up in some special room. They are referred to in the class and in the lectures, but are not used as they should be; hence, to make a museum most useful, it should be in the midst of the pupils and teacher—on the walls, in nooks and corners of the class room and in the halls. The students also come

more frequently in contact with the specimens when they are located in the room in which they recite; they associate—sort of loaf with them and learn to know them; this method of arranging and using specimens gives a school a working museum. The children and the teacher make the cases and frames to hold the specimens, if there is no other way to get them. If there is a manual training department, the frames, cases and boxes are forthcoming.

Collecting a Museum.

I. MATERIAL.—Objects of nature, such as soils, rocks, minerals, fossils, insects, birds, plants, woods, leaves, flowers, etc.; pictures of objects, pictures of industries, pictures of manufacturing establishments and processes; pictures of men who have figured in the particular life of the community, state and country; pictures of discoverers, of inventors, poets, literary men, scientists, orators, statesmen, etc.

II. SOURCES OF MATERIAL.—Nature, magazines, newspapers, government reports, stories, farmers, manufacturers, travelers, men, friends living in other countries, etc.

III. SECURING MATERIAL.—1. Collections. 2. Gifts. 3. Purchases. 4. Deposits.

Collections.—The pupils and teachers collect. They can go on collecting tours; they can collect incidentally at all times. When

original pieces cannot be had, replicas are obtained so as to show the unity of life in the particular activity.

Gifts.—Friends of the museum will give to the collections. There are many persons in the community—patrons and others who are glad to give specimens when they know that they will be taken care of. Manufacturing firms are, as a rule, glad to give to museums sets of their products. As an example, the cotton mill will give an exhibit showing the making of cloth from the crude cotton to the finisht product; a knife manufacturing establishment will give the knife in all its forms from the crude iron to the finisht product; other firms will do the same. These are excellent to show the evolution of the particular object.

Purchases.—There are many things that may be purchast for a few cents; example, from a grocer samples of coffee, tea, nuts, spices, etc., may be purchast. This may be carried to any extent.

Deposits.—There are often people in the community who have interesting things who do not want to part with them, but are willing to give them to the museum for awhile on deposit, if they are sure that they will be taken care of. They are just as good for teaching purposes as if owned by the school.

IV. PREPARING MATERIAL.—There are different ways of preparing specimens. One of the simplest

ways is to have a notebook which belongs to the museum; when a specimen is acquired, number it, name it, and write its number and name in the notebook, stating who collected it, who gave it to the museum and any other knowledge that is necessary to describe it. It also dignifies a specimen to label it; it still more dignifies a specimen if a neat block is made and the specimen laid on it; if the edge of the block is beveled, it makes a good place for the label. If the specimen is a picture, it may be labeled and numbered on the back; for keeping safely it may be put in an envelope with similar pictures. Another way would be to mount the picture on a neat cardboard of a proper size before it is numbered and labeled. A more permanent way is to write a card for each specimen and have on it the name, the number and such other details as are useful; number the specimen and label it in the same manner. These cards may be kept in a small tray made of cardboard or wood; at the same time keep a notebook in which the specimen is registered or entered and in which notes made about it that are useful are recorded. Still more elaborate plans may be used in preparing a specimen; in any event, in the collecting of specimens for a museum some preparation is necessary to make them useful.

V. KEEPING MATERIAL.—On the walls of the room, in nooks and corners and in the halls is space for

frames and cases for keeping the specimens. This is necessary, for they should be well kept. Children, patrons and friends are always more interested in specimens that are cared for. They should be kept safe, clean, and neatly arranged; they should be kept so that they are convenient for teaching purposes.

VI. ARRANGING MATERIAL.— In arranging material take into consideration convenience for use and the relation of the specimens. Make the specimens look as important as possible. They should also be arranged so as to teach a lesson by simply looking at them; to illustrate, here is a shelf labeled Mexico; on it are grasses and plants, and material made out of these grasses and plants, out of which the Mexicans make a number of different textil products as baskets, mats, carpets, brooms, brushes, etc. All these are arranged in their order on the shelf and labeled properly. These teach a lesson without the presence of the teacher.

VII. USING MATERIAL. — This material is got up for use in the interpretation of the lessons that the children are studying in the school; this makes the museum an organic part of the school; the material is also used in its arrange ment and setting for inspiring and instructing when there is no one present; it will instruct those who visit; it will instruct the children while looking at the specimens; it will instruct the teacher and all while looking at them and

while preparing them. There is a great deal of instruction, inspiration, knowledge and growth in the preparation and arranging of a museum.

Museums.

Anthropological Museums.

MANAGER—W. G. CHAMBERS.

The Anthropological group of museums is distinguisht from the other two groups on the following basis: The collections of the Physical Museums represent the processes and products of inanimate nature, of the various physical and chemical forces; the Biological Museums illustrate in their specimens what nature has produced through the so-called organic forces operating in the vegetable and animal kingdoms below man; while the museums of the Anthropological group exhibit in their varions collections the products and processes of self-conscious intelligence as it functions in human life. In this group are included the following museums, each illustrating the products of human thought, feeling, and action in one distinct aspect of human experience: (1) the Psychological Museum; (2) the Sociological Museum; (3) the Historical Museum; (4) the Museum of English and Literature; (5) the Museum of Reading and Dramatic Expression; (6) the Museum of Classical Antiquities; (7) the Museum of Modern Languages; (8)

the Pedagogical Museum; (9) the Textil Museum; (10) the Domestic Science Museum; (11) the Manual Training Museum; (12) the Physical Education Museum; (13) the Mathematical Museum; (14) the Museum of Art; (15) the Museum of Ceramics; and (16) the Museum of Music.

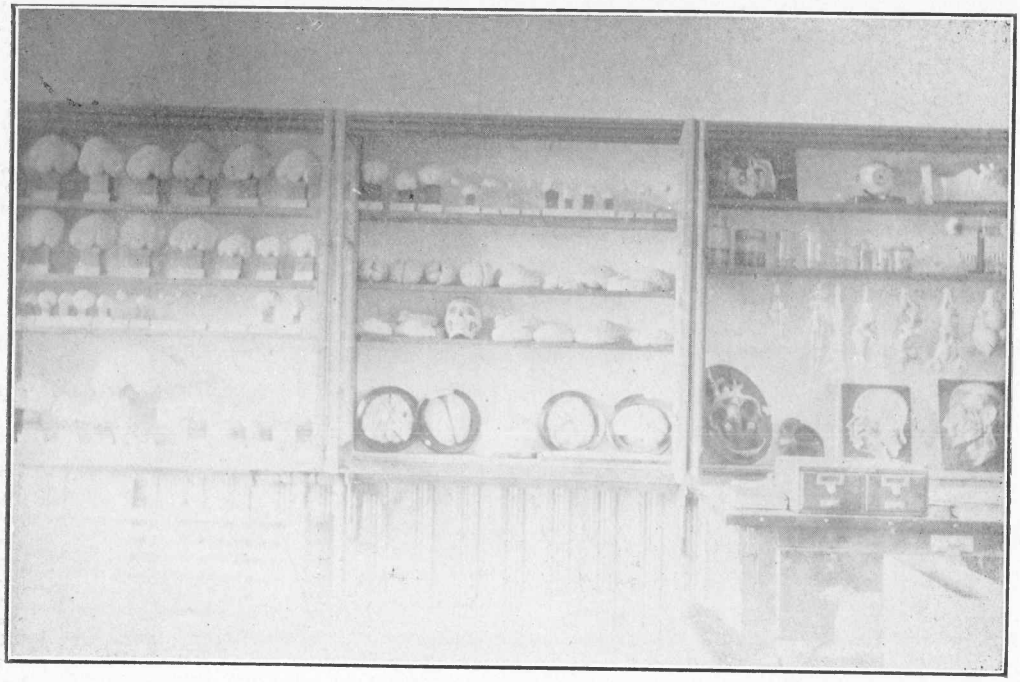
The field covered by each museum is sufficiently indicated by the following reports.

Museum of Psychology.

CURATOR—W. G. CHAMBERS.

The collections of the Psychological Museum fall naturally into a number of groups corresponding to the different departments of the science. Thus we have specimens, models, charts, books and apparatus illustrativ of Human, Comparativ, Genetic, Ethnic, Experimental, Abnormal, Physiological and Histological Psychology.

The materials of this museum are, fortunately, adapted both for museums and laboratory work and are of constant use for teaching purposes. For example, many of the pieces of apparatus are exhibited to show the progress in the development of experimental psychology and at the same time are used for experimental purposes. The animal brains both illustrate stages in the development of the nervous system and furnish material for dissection and histological study. Our charts (most of which are manufactured in the department) both illustrate the grafic methods of showing comparativ facts



Museum of Psychology.

and statistical results, and are constantly brought into use for teaching psychological principles. Thru the study of our numerous old books on philosophy and mental science we trace the development of the various psychological theories and discover the times and manners of the various changes which have occurred in psychological thought. And again, our collection of skulls and casts of cranial cavities of representativ races, in addition to the historical and anthropological interest, furnishes valuable illustrations for ethnic and certain phases of comparativ psychology.

REPRESENTATIV COLLECTIONS.

I. About fifty volumes representing the development of philosophical and psychological thought in this country, and including:—

Early text books on "Mental Science" and "Mental Philosophy," among them Upham (1875), Hickock (1857), Dugald Stewart (1855), Wayland (1845), Abercrombie (1841), Rausch (1840), McCosh (1860), Victor Cousin (1834) and many others.

Philosophical works of the Scottish philosophers, Reid, Stewart and Hamilton.

Lord Kames' Elements of Criticism (1830).

Jonathan Edwards' Inquiry into the Freedom of the Will (1757).

Boethius' Consolation of Philosophy (1785, Tr. by Ridpath).

Use of the Body in Relation to the Mind, by George Moore, M. D., (1847. One of our first attempts at Physiological Psychology).

Isaac Watts' Logic, or the Right Use of Reason (1806).

Isaac Taylor's Elements of Thought (1857).

II. Five large casts of different sections of the Human Brain.

III. Eight sets (three models each) of Witmer's Brain Models, in wax, life size.

IV. A set of models of the sense organs.

V. A series of fifty plaster casts of cranial cavities of the higher vertebrates.

VI. A series of models of typical nervous systems including radiates, annelids, insects, mollusks, etc.

VII. A series of wax models, enlarged, of typical animal brains, including amphibia, birds, fishes, etc.

VIII. Actual brains, including human, sheep, cat, rat, etc.

IX. A number of preserved specimens, such as a human foetus, nervous system of a cat, histological slides, etc. Also skulls, models of vital organs, etc.

X. A very complete set of charts of nervous system, brains, brain sections, courses of fibers, etc., some imported and some made in the department. Also charts, on cloth, showing results of child study and statistical investigations. Very complete sets.

XI. Psychological Instruments, representing the more common experiments in psychological laboratories; color mixer and discs, chronoscope, ergograf, dynamometers, electric keys, switches and attachments, kymograf, and numerous others.

Museum of History and Anthropology.

Museums of History and Sociology.

CURATOR—G. R. MILLER.

I. The Historical Museum is in constant activ use thruout the class rooms of the school. Its more than two thousand specimens contribute material for actual teaching purposes in this school nearly every hour of the day. This material finds its way into every grade from the kindergarten thru the high school. This Museum is an exhibit of Historical specimens. It attracts many visitors, but its function is strictly pedagogical. Normal students are taught to consider it always as a positiv adjunct to the school teaching equipment as a distinctly valuable part of the school apparatus for class purposes, and as such they are using it in an effectiv manner in the Normal practis school.

II. A partial schedule of specimens by groups:—

Flags of all nations; large fotografs of great historic paintings; wall portraits of great historic characters; collections of American colonial money; collection of Confederate money; collection of United States fractional scrip; collection of American, Mexican, Spanish, French and English coins; fine specimens of United States, Canadian, Alaskan and Russian furs; series of old firearms; collection of old swords, sabers, bayonets and knives; Alaskan exhibit of clothing, utensils and weapons; a

Philippine exhibit of over one hundred specimens; American Indian flints, arrow heads, spear heads, stone axes and hammers (fifty specimens); Philippine basketry and pottery; a large collection of rare American Indian pottery; medals awarded the Normal School at World expositions; American Indian totemic specimens; American Indian household idols and utensils; relics of American battlefields; a large exhibit of industrial manufacturers.

Museum of English and Literature.

CURATOR—LOUISE M. HANNUM.

The chief function of a museum in the English department of a school like ours is to remove obstacles to the influence of literature. When the images and conceptions which fulfil expression are unfamiliar or remote from the pupils' habitual plane of mental life, the visual appeal of pictures and sculpture may furnish the element necessary to arouse association and stimulate the play of feeling. Similarly, the time from which the piece comes, the personality that gave it birth, may be brought nearer the student by a MS. edition, an author's copy, an artist's illustration. Since the world of image, notion and discourse is a world common to the arts, and lying near to that of history, the more various and interconnected may be the avenues thru which that world opens itself to the mind, the more secure and lasting is likely to be the

Museum of English and Literature.

citizenship which the student may acquire in his all too brief years as a disciple.

For awakening a sense of the significance of form in revealing meaning, and of method in teaching, there is being gathered a collection of text books to illustrate the ideas and practis of other periods, and the advance in pedagogy which is not less markt in grammar, composition, and rhetoric than in the presentation of literature.

Perhaps the feature of most constant value in the museum should be the illustrativ material to accompany oral literature in the grades. It was the imaginary picture of burning Troy which aroused in the boy Schliemann the determination to reveal to the world the ancient scene of the great story that had delighted his childhood. In seeking to vivify for the child mind and heart the life of beauty and ideal worth, our pupil-teachers will most effectivly advance their own power to correlate all means furnisht by a museum for building up the emotional and imaginativ life.

The department is at the present time in possession of two hundred fotografs and other reproductions; four framed pictures for the wall; six subjects in *bas-relief* for the wall; several art shields; thirty statuets and medallions; rare editions or fac similes of Homer, Shakespeare, Milton, Goethe; manuscript and illustrated editions for the study of folk-literature, including epic, myth, ballad, saga; text books illustrating progress in editing literature for the young and in teaching grammar, rhetoric, composition, and the history of literature.

Museum of Reading, Literary Interpretation, Dramatic Art.

CURATOR—FRANCES TOBEY.

ASSISTANT CURATOR—MARSHAL PANCOAST.

The service of the Dramatic Reading Museum is (a) to make concrete and vital the study of the historical development of reading text-books and of methods of teaching reading; (b) to illumin the study of literary interpretation by means of illustrativ material, including pictures, casts, autograf letters, manuscripts, rare and unique books; (c) to stimulate interest in the drama and promote an intelligent study of its historic development by such objectiv means as historic costumes, varied articles pertaining to stage-craft, grafic and plastic reproductions of historic theaters and of great exponents of dramatic art.

Material on hand:—1. A series of American text books of reading, from the year 1790 (60 volumes).

2. Fotografs of modern reproductions of Greek theaters.

Museum of Classical Antiquity.

CURATOR—JAMES H. HAYS.

The chief functions of the classical museum is to furnish to the Latin classes and to classes in Ancient History a great interest in the life of the Roman and Ancient peoples. The Latin language is no longer

Museum of Classical Antiquity.

taught for its own sake, nor for what mental training it may furnish, but for the purpose of bringing pupils into closer touch with a civilization which has contributed much to our own. Everything that speaks of the daily life, thoughts, and activities of these people is a bond between them and ourselves. Classic art unfolds itself to us in every Roman ruin or Grecian vase. A Roman coin bearing the image and superscription of a Cæsar bids us "render unto Cæsar the things that be Cæsar's." Pictures, casts, manuscripts, weapons of war, maps of battle fields, and the literature of classic days, all contribute to keener appreciation of Roman and Grecian daily life. By means of these more or less tangible expressions of the life of those early days, what of truth and beauty the Greeks attained, and what of strength and culture the Romans possest, we hope the better to secure in our teaching of their language and literature.

CLASSIFICATIONS AND SPECIMENS.

In the classical museum fine specimens along the following lines may be seen:—Sixteen plates of original manuscripts of classic writings; four vols. Modern Texts, Cicero's complete works, editions 1724, etc.; six vols. Translations of Classics, including Dryden's Virgil, Ed. 1698; sixteen casts of heads and busts of distinguished Romans and Greeks; also figures of mythical characters, and illustrativ architecture; seven pictures of classic scenes, buildings, national games, and public invents.

Museum of Music.

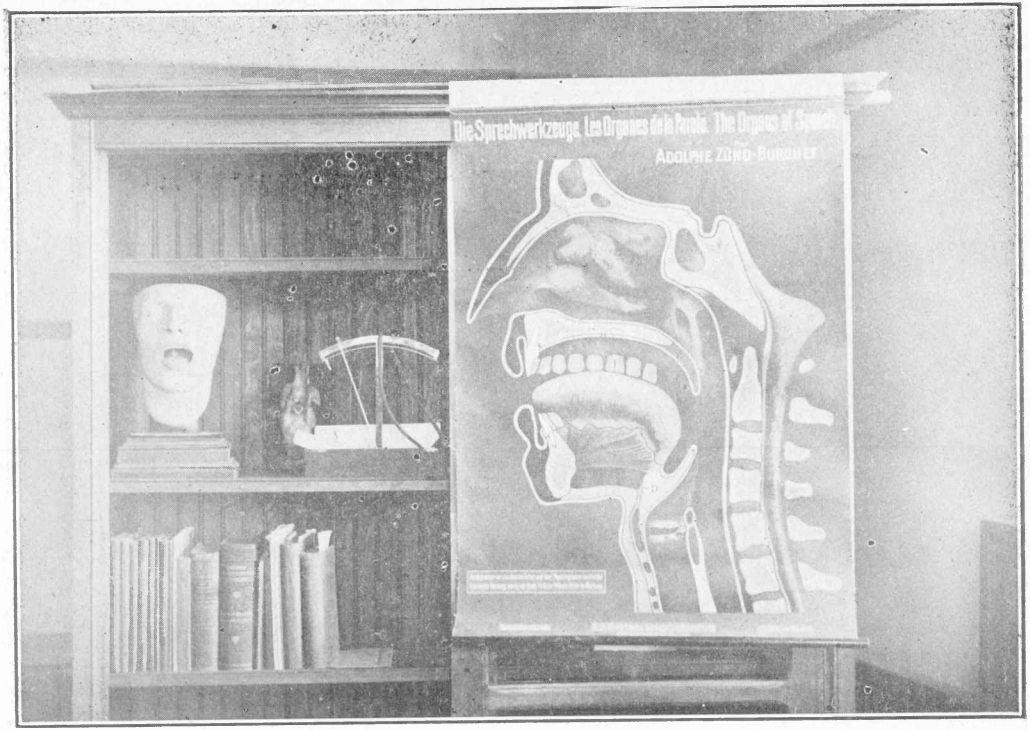
CURATOR—WILLIAM K. STIFFEY.

I. FUNCTION OF MUSIC MUSEUM.

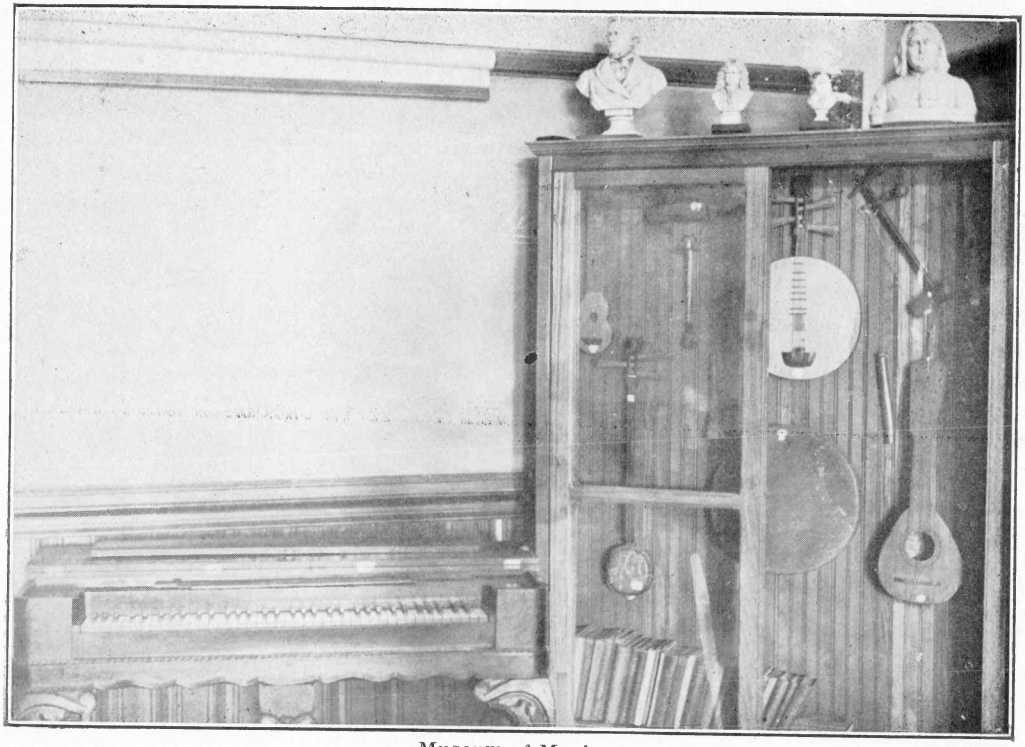
The proper function of a music museum would be to illuminate by illustration the various phases of music teaching. In teaching notation, specimens of the various notes used, from the letters, the neumae, etc., show the evolution of notation as a more complex art required. A well equipt museum would also contain works printed in the various notational systems, such as the Paris Cheve, the Aiken seven character system, and the Tonic Sol-fa.

Specimens of church music from Palestrina, LeLasso, etc., and Madrigals from Festa, Waelrent, Edwards and others should be used to illustrate early attempts at counterpoint; specimens of Farrant, Tye, Gibbons, Ford, etc., to show the growth of Counterpoint into Harmony; compositions of Scarlatti, Purcell, Correlli, and others to show the beginning of the String Band and Musical Form.

The above course will have prepared the pupils to understand and appreciate the history of modern music from Bach and Handel to the present time. Specimens of the Fugue, Sonata, Symphony, etc., of the instrumental forms, and the Art Song, Oratorio, Opera, Cantata, Anthem, Motet, etc., should be illustrated by judiciously selected specimens of standard works. Running with the study of the above enumerated works a course (incidental) in the biography of the various composers would be of interest. Pictures and busts of



Museum of Modern Foren Languages



Museum of Music

the leading representatives of the various epochs could be used with good effect.

Such instruments as can be used to give the intervals of scales or qualities of tones peculiar to their class or period might be utilized for that purpose.

II. LIST OF DIFFERENT SPECIMENS IN MUSIC MUSEUM.

Philippino lute, Chinese mandolin, Chinese lute, Chinese violin, Philippino violin, cheremia (ancient war fife of Aztec), Aztec lute, Alaskan drum, Alaskan dance rattle, Alaskan deer-toe rattle, melodian; Pictures "The Song" —Grutzeer; "The Concert"—Cedarstrom; "Mozart and Sister Before Maria Theresa"—Borckman; "The Singing Lesson"—Gay; "Evening Song"—Zmurko. Busts of Liszt, Schumann, Wagner, Handel, Mozart, Beethoven. Medallions of Meyerbeer, Rossini, Chopin, Gluck, Auber, Beethoven, Brahms, Wagner, Handel, Haydn, Mendelssohn, Mozart, Liszt.

Museum of Modern Foren Languages.

CURATOR—A. GIDEON.

A Museum of Modern Foren Languages has both an illustrativ and a laboratory function. It includes objects or reproductions of objects that tend to throw light upon the material and spiritual life of the nation whose language is being studied:—Pictures of celebrated persons, places, and buildings; maps and plans of cities; casts and models; illustrations of garb, manners, and customs; fotografs depicting historical events; reproductions of works of art in painting and sculpture; views

of noted landscapes, etc.; text books used in instruction in foren schools, as well as documents and objects having reference to, or forming a part of the foren educational system; interesting editions of literary works; books and apparatus exhibiting the development of instruction in languages in America and England; apparatus for present needs, charts, fonetic instruments, models of the vocal organs.

The museum at present contains:—A number of maps of foren countries; a series of fonetic charts; books exhibiting different methods of foren language instruction; a set of instruments for fonetic experiments; models of the vocal organs.

Soon to be added:—A collection of fotografs; Cassel's Historical Cartoons; Hölzel's Bilder; Models of Weimar Theater, process of bell-casting, Bastille, etc.; Könnecke's Bilder Atlas.

Museum of Art.

CURATOR—R. ERNESTI.

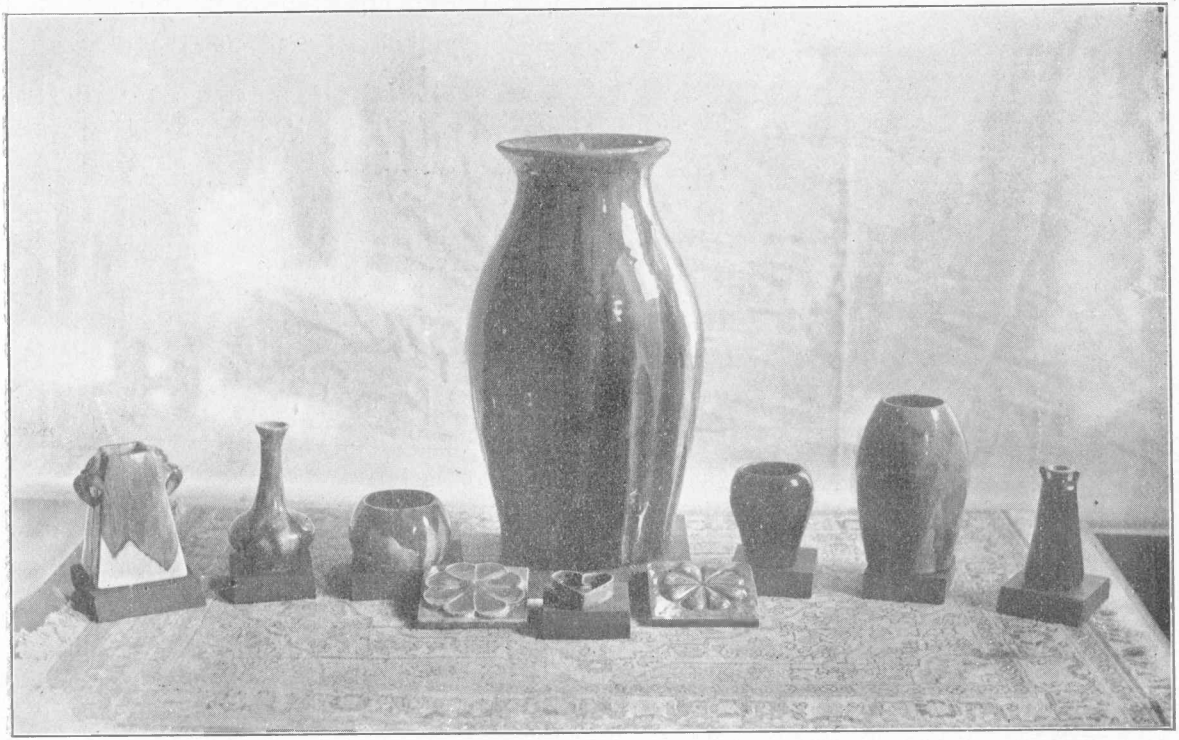
The Art Museum of the Colorado State Normal School is particularly fortunate is being finely equipt to perpetuate and carry out its functions in the fullest sense. It is not simply a repository of paintings, pictures, casts, statuary, pottery, metals and the many things that lend charm to an art museum, but it is an activ center of inspiration.

The energy that lies in the instruction thru our museum is forcibly illustrated in every lesson given by

Museum of Art.—Pottery—First Step on Wheel.

Museum of Art.—Pottery—Second Step—Decorating.

Museum of Art.—Pottery—Third Step—Glazing and Burning.



Museum of Art.—Pottery—Finished Product.

Museum of Art.—Pottery—First Step—Free-hand.

Museum of Art.

showing the greatest correlativ possibilities with the whole individual, scientific and art world, which is the deep and broad thought that underlies all art creations.

The use of this museum makes for fullest academic possibilities in art, not only in the fact we can reproduce and paint and draw these articles, thus training hand, eye and soul, but that the student is brought into touch at every step with facts of history.

It is not the working for the preparation of specialists, but the touching of life in the fullest thru industrial and scientific correlations that intelligible exposition of ideas is produced, which make life full of rich values. For instance, in the use of replicas of Greek statuary we come in touch with the early history of art in its greatest perfection. In the Ipsen replicas of Greek vases we also have a stage in history, as well as in the potteries of the American Indian; so we come down gradually in this historic art study till we reach productions by the English—Doulton, Ruskin, Royal Worcester—or until we have the American vista in the line of Grueby, Rookwood or Teco. We do not touch history or any other study directly, but we come very close to all and are ever face to face with the evolution of fine form and structure.

LIST OF ARTICLES.

Statuary and casts, 146; paintings, 15; other pictures and reproductions, 717; potteries, 159; models—metals and bronzes, 193; total, 1230.

These are distributed as follows: In Library—Statues, 8; bronzes, 2; marbles, 3; vases, 2.

Library Hall—Pictures, hanging, 6.

Lower Main Hall—Pictures, hanging, 6; statuary and casts, 23.

Rest Room—Casts, 1; pictures, 1; ancient clock, 1.

Superintendent's Office—Pictures, hanging, 2.

President's Office—Pictures, hanging, 3; statuary, 1; pottery, 2.

In Art Room proper—Casts and statuary, 69; Branam pottery, 36; Japanese models, 37; Indian models, 24; diverse models, 168; Buffalo pottery, 54; metal ware, 1; ancient clock, 1; spinning wheel, 1; pictures, unframed, 354; students' exhibit—pictures, 363; marble vase, 1.

Chapel—Pictures, hanging, 12; statuary, 5.

Upper Hall—Pictures, hanging, 5.

High School—Pictures, hanging, 15; statuary, 8.

Training School—1 and 2 grades—Pictures, hanging, 8; statuary, 5.

3 and 4 grades—Pictures, hanging, 12; statuary, 7.

5 and 6 grades—Pictures, hanging, 5; statuary, 3; vases, 4.

7 and 8 grades—Pictures, hanging, 20; statuary, 12; bronzes, 2.

Museum of Mathematics.

CURATOR—DR. GEORGE B. HALSTED.

The functions of a mathematical museum in teaching are manifold. Historically that the great names of this queen yet handmaiden of the sciences should be given concrete connotation is highly desirable. The scope,

the range of the present world-wide creativ activity in this oldest of the sciences and the accompanying stimulus and uplift may be visibly and impressivly illustrated. Again the variety and wealth of figures and models which of late more than ever have been called into existence to connect sensuous intuition with the ideal construct, which is mathematics, make the museum a living coadjutor in the teaching of what is at once the most classic and the most modern of subjects.

The numerous and amazingly powerful instruments and machines which modern invention has contributed to accomplish with superhuman accuracy and ease the operations involved in the applications of mathematics to life, practically indescribable in words alone, may be simplicity itself to hand and eye.

The Mathematical Museum consists of:—More than five hundred valuable books illustrating the evolution of the science; complete sets of all the mathematical periodicals in all languages; pictures of the great mathematicians and things pertaining to them and their science; an extraordinarily rich collection of mathematical manuscripts and autografs; figures and models, including the paradoxical contributions from Hyperspace and Non-Euclidean Geometry; mathematical instruments, apparatus, and machines; miscellaneous matters and things mathematical.

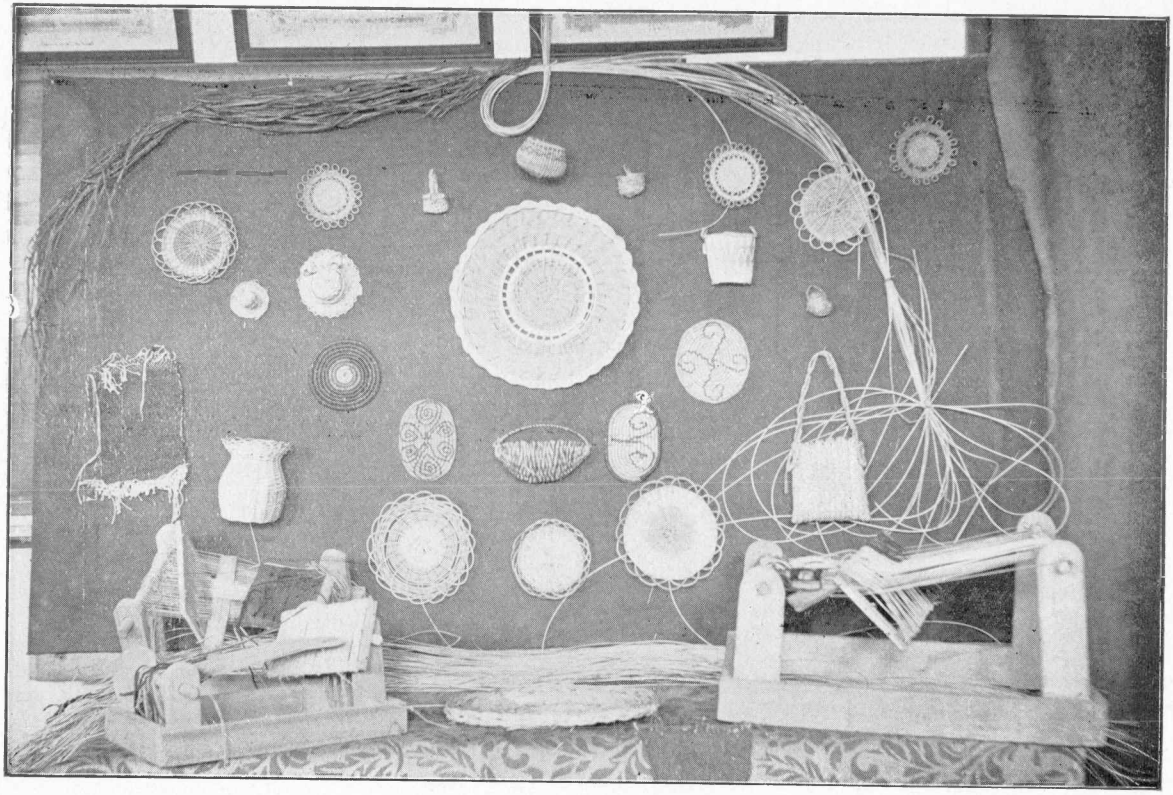
Museum of Textils and Domestic Science.

CURATOR—ELEANOR WILKINSON.

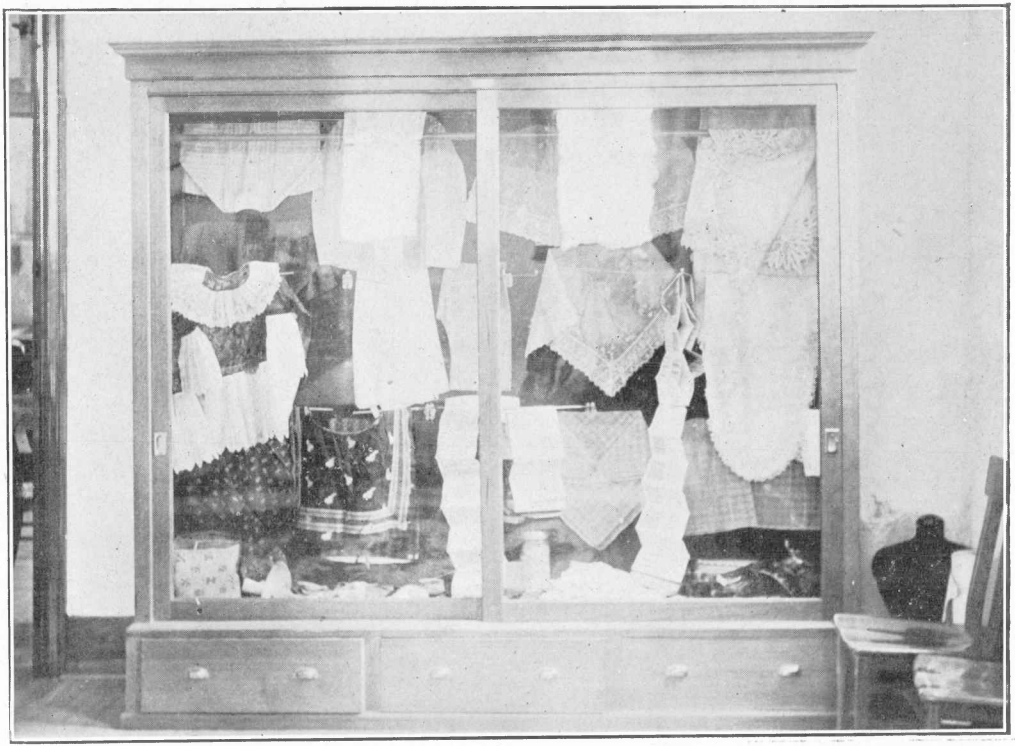
This department museum is necessarily divided into two sections. These sections are on exhibition respectivly in the sewing rooms and in the cooking rooms.

These exhibits are in constant use in classes in the elementary school, the high school, and the normal school. The Domestic Science Museum is a collection of specimens for practical teaching purposes, and is so used.

The following is a partial schedule of exhibits in this museum:—Fourteen Philippine household utensils; twenty specimens Philippine clothing; two specimens Philippine bedding; large exhibit of domestic textils; large exhibit of domestic cotton cloth; large exhibit of Navajo rugs; twenty-five specimens imported fine laces; Mexican drawn work; five specimens Philippine brooms; six specimens of Philippine shoes; twelve specimens of Mexican baskets; twenty-five specimens of Mexican mattings; fifteen specimens Mexican fibers; ten specimens Mexican brooms and brushes; twelve specimens Imperial Smyrna rugs; ten Indian moccasins; specimens Alaskan fine bead work; five specimens Alaskan bone spoons; twenty-three samples fine oriental rugs; thirty specimens linen thread; thirty specimens cotton thread; twenty specimens of teas; fifteen specimens of coffees; twelve specimens of wheat food products; twelve specimens corn food products; six specimens, evolution manufacture of chololate; eight collections of food charts; six collections of meat charts; twenty-five exhibits showing chemical composition of common foods.



Museum of Textils.



Museum of Textils

Museum of Manual Training.

CURATOR—S. M. HADDEN.

The museum is organized along the following lines—historical, theoretical and practical.

The historical is illustrated by a collection of material, tools and processes that have largely influenced the lives of peoples.

This collection, when properly installed, will give a wide knowledge of and a feeling for the activities of peoples.

The exhibit should be of interest to the layman because thru it and his own experiences he will be able to read the history of the industrial life of people.

Thru the race expression as interpreted by such an exhibit the student teacher will find much material that will aid him in both directing and interpreting the child's activities.

The child will gather much valuable information from such an exhibit, reading thru the exhibited products the lives of peoples.

The exhibit should also aid the child in his search for interesting lines of work.

The theoretical section will deal with the industrial activities of various countries as displayed by the work in their public schools.

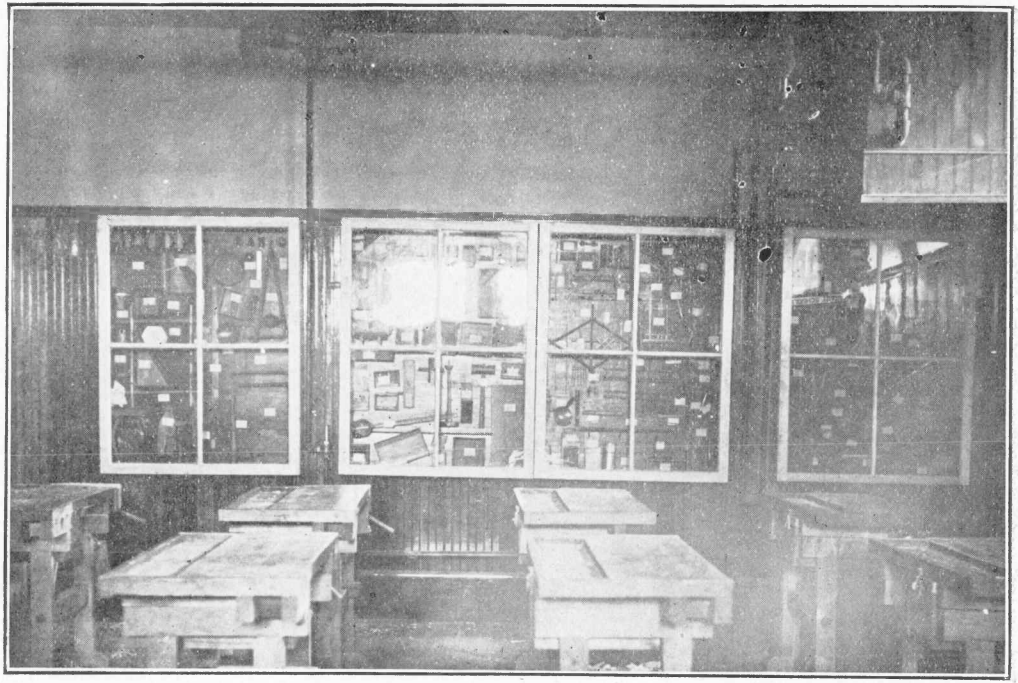
Such an exhibit will do much for a student teacher, showing him the close relation between the home, the industrial life of the community, and the industrial life of the school.

The practical side will include a collection of materials

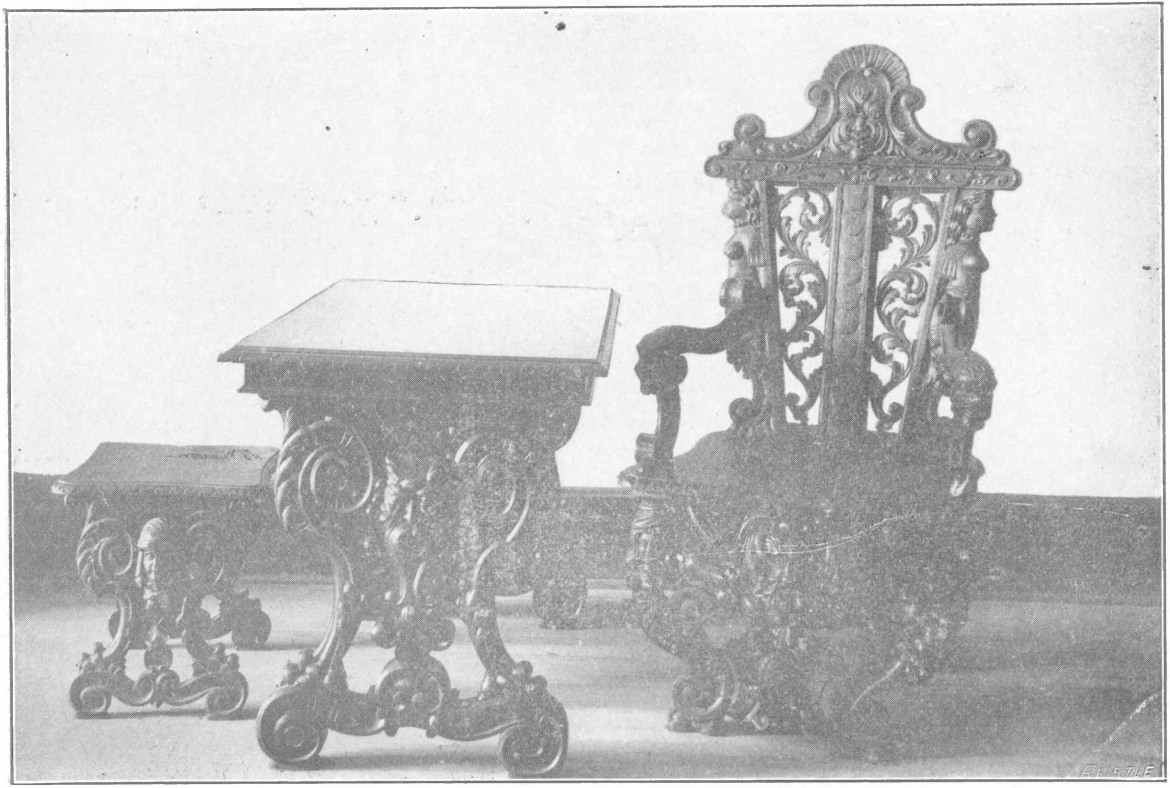
from widely separated districts, so arranged that they will be of interest to the visitor at the school.

We want to make this collection so complete and arrange it in such a manner that it will become a ready reference collection to which the teacher, the student-teacher or the child in any grade may go and obtain valuable information in the minimum amount of time.

Below is a list of material now in position in the Museum of Manual Training:—Nine processes in the making of a saw—the gift of Henry Diston & Sons, Philadelphia; eight samples of different Philippino wood-working tools; eight samples of wood-carving, from Nuremburg, Germany; three samples of carved furniture, copies of originals in the Germanic Museum, Nuremburg, Germany; eleven samples of Alaskan Indian wood-carving and color decoration; six wood-working and wood-carving tools used by Alaskan Indians; seven primitiv stone tools, found in the United States; one Zuni Indian fire drill; one American Indian metal drill; four nativ Mexican Indian awls; eighty specimens of Japanese woods, finisht and mounted; one hundred twenty-four specimens of woods of the United States, finisht and mounted; fifteen specimens of woods from the Philippine Islands; ninety-six specimens of Porto Rican woods, finisht and mounted; six hundred pictures of Craftsman furniture, mounted in a filing case in alfabetical order; two hundred eight micrografs of woods from all over the world, mounted in a case for reference; one nativ Mexican Indian pulque cup, mounted; two shingles from the Philippine Islands, used by the nativs, mounted; one model of a sled used by the nativs of the



Museum of Manual Training—Japan School Exhibit.



Museum of Manual Training.

Museum of Manual Training—Carving.

Museum of Pedagogy—Games

Philippine Islands, mounted; one hundred fifty-six samples of wood and metal work from the public schools of Japan; forty-seven samples of wood work from the public schools of Massachusetts; one specimen of wood carving from Egypt; one inlaid box, made by inmate of State Penitentiary of Colorado.

Museum of Pedagogy.

CURATOR—D. D. HUGH.

The function of the Pedagogical Museum is to provide material that will be useful for illustrativ purposes in connection with the teaching in the Training Department; or that will throw light upon the present organization of equipment of schools, and upon the evolution of the various subjects of the curriculum. For this purpose the material has been classified under the following heads.

School Furniture.—Miscellaneous samples collected and displayed with the aim of being helpful to all who have to do with the purchasing of modern school equipment.

Books.—A special library for teachers containing now about a thousand books and pamphlets illustrating:

(a). Text-books today used in class work—a section intended to include the best of these, both for our own guidance in providing for our classes, and for the sake of acquainting the student-teachers and all interested visitors with the field from which they may select text-books for themselves and their schools.

(b). Old text-books, illustrating the evolution of the treatment of the various school subjects—a section chiefly of use to the advanced student who wishes to broaden his scholarship by a comprehensiv survey of the educational history of the past century and more as embodied in its text books, where the eliminations and shiftings of emphasis are excedingly suggestiv.

(c). Books on the theory and practis of teaching—a section designed to acquaint both student and visiting teachers with the newest thought of those best qualified to guide in the work of teaching.

Pictures. — (Fotografs, fotogravures, carbon and color prints, stereopticon slides, and illustrations culled from various current publications and mounted by the school)—A collection made with the double aim: (1) Of meeting the demand for illustrations in class work; and, as far as may be thru tasteful decorations, of ministering to the ultimately utilitarian or culture need; (2) of furnishing in both these functions a good example for the public schools at large.

The sources of the more expensiv pictures were: The Berlin Photographic Co., Denver; The Soule Art Publishing Co., New York; The Sanborn Soile Co., San Francisco; of the cheaper pictures those of the well-known Perry Picture Co. are typical.

Apparatus and Devices for Class Use.—Especially in the lower grades.—(1) Apparatus now in use in progressiv schools; for example, charts to be used in the teaching of arithmetic; the maximum and minimum thermometers, and the anemometer, to be used in the teaching of geografy. (2) Apparatus no longer in use

in the better schools, but useful to the student of the evolution of school apparatus.

Games.—This section of the museum contains material for playing games that are useful in connection with the teaching of number, reading, and rythm. For example, addition, subtraction, and counting by 2's, 3's and 4's, which gives a foundation for the multiplication taught later by keeping scores for different games. Written instructions for playing games are placed upon the blackboard or printed upon slips. The children read these instructions and play the games accordingly.

Toys and Kindergarten Material.—A collection not thoughtlessly, but selectivly made, based on those nativ interests of children that find satisfaction in their play, chosen to demonstrate the claim of toys to a place in school life as incentivs to experimentations and as helps toward facil motor coordination and classified roughly according as they: Anticipated future activities, as the doll; or appeal to manual skill, as carpenters' tools; or satisfy a natural love of change, as the Harlequin; or illustrate elementary types of machinery, as the cart; or appeal to a love of tone or rythm, as the horn; or require the fitting of part to part, as building blocks, etc.

The various departments contain already considerable material, and are being constantly added to. We have (for illustration) in:

School Furniture.—Adjustable seats and desks, prest steel wardrobe lockers, blackboard, erasers, crayon, supplies of different sorts, besides miscellaneous minor school conveniences.

Books.—About a thousand, including pamphlets.

Pictures. — Conservativly a thousand, part still unmounted; besides these a supply of foren postcards, and nearly a thousand stereoscopic slides.

Games.—About fifty, with many duplicates.

Apparatus.—Special helps for teaching arithmetic and geografy; blocks, charts and the like, an anemometer and a maximum and minimum thermometer, a barometer and the like. Besides these, many busy-work theories.

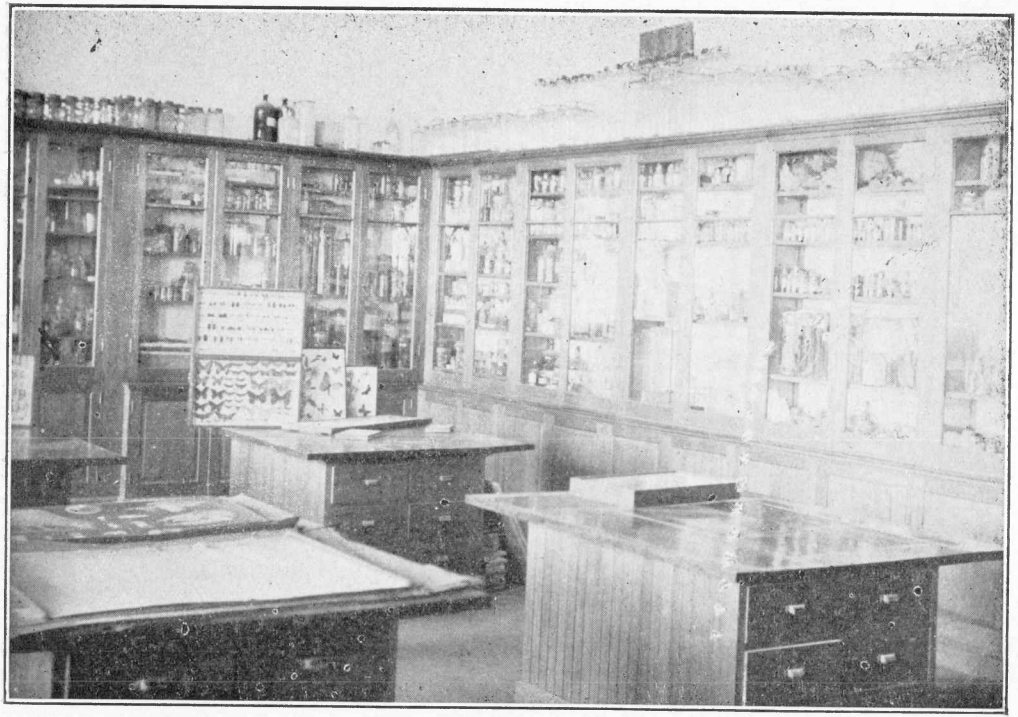
Toys.—A few only as yet—chiefly dolls, illustrating in their dress the costumes of various nationalities.

Museum of Reptils, Mollusks, Crustacea, Protozoa and Insects.

CURATOR—A. E. BEARDSLEY.

I. The Function of the Museum in Teaching.

As an important auxiliary in the teaching of nature-study and the biological sciences, the museum is in constant use. The living specimen in the hands of the pupil is supplemented by other specimens from the museum collections illustrating its relation to other animals or plants, or showing different stages in its life history, —stages which may be obtainable only with great difficulty, or not at all, at the particular season when the lesson is to be given. By means of the museum collections local and geografical varieties may be brought into direct comparison with the specimen in hand, illustrating the effects of environment and of isolation upon the development of the species. Except for the museum,



Museum of Biology

such comparison could, in general, be only vaguely suggested to the mind of the student, since it would be extremely rare that fresh specimens of the different kinds needed would be readily obtainable at the same time. In many animals marked changes in appearance occur with the changes of the seasons. The mountain hare, the ermin, and the ptarmigan in their winter dresses are widely different in appearance from the same animals in their summer costumes; living specimens change with the changing of the seasons and, at a given time, show their characteristics for that particular season only; the museum enables us to see all the seasonal forms together, at one view and at all seasons. The museum can never fully take the place of the living specimen nor supply a perfectly natural environment; but as an auxiliary to these, and as an aid in teaching the biological sciences and nature study, the museum is indispensable.

II. Brief schedule of specimens.

1100 Protozoa, twenty Porifera (sponges), 150 Coelenterata, 515 Vermes, 1150 Mollusca, fifty Echinadermata, 7075 Crustacea, thirty Myriapoda, 5500 Insecta, 250 Arachinida, 650 Fishes, seventy Amphibians, 125 Reptils, 7500 Plants, 300 Fossils.

Museum of Birds and Mammals.

CURATOR—L. A. ADAMS.

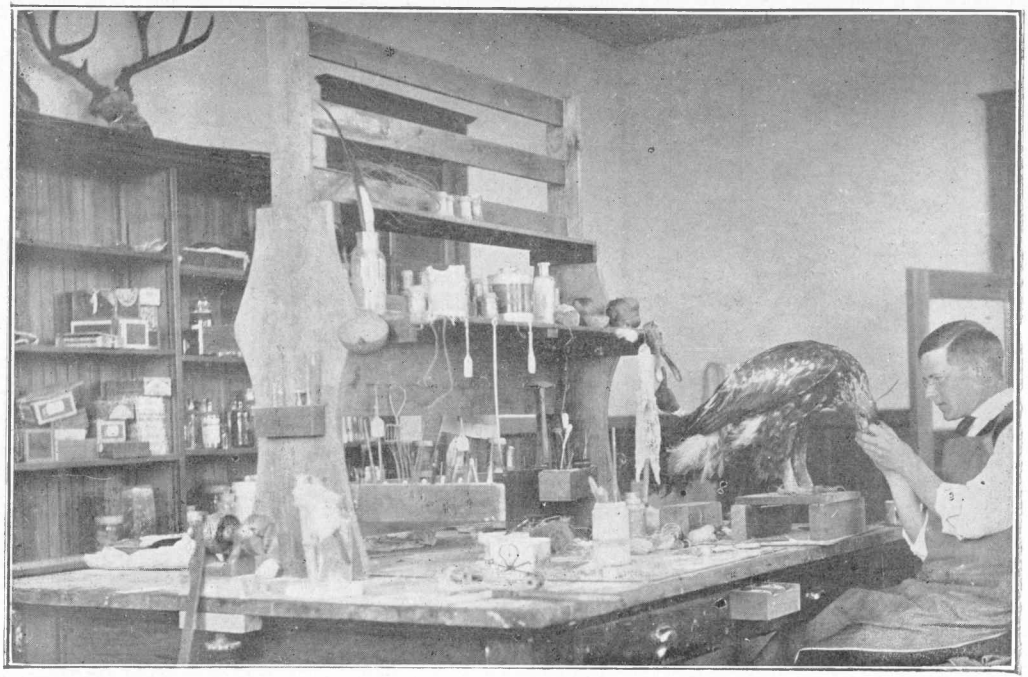
The Museum of Natural History occupies the northeast portion of the first floor of the new Library building.

The equipment consists of a large display room where the specimens are shown, the office of the curator, and the laboratory. The Museum room is large and well lighted and has a large floor space for showing specimens. The laboratory is modern in every way and is prepared to do any kind of museum work.

The museum is growing rapidly and new specimens are being added every week. It is planned to make the museum modern in every way, and no pains will be spared to attain this end. It will not be "An asylum for the declining years of things of little use" as Bumpus so aptly describes the museum of long ago. The old idea was to build up a museum so as to humble the observer and impress him with his ignorance; a common label was a great mistake and attractivness was carefully stifled; the specimens were arranged in military order with great care, and, while a joy to the scientist, were of little use to the public. We now try to make the museum attractiv, a place of pleasure as well as instruction. In other words the best use is being made of it.

Our museum is planned for educational purposes, and we are trying to make it worth while to the student and public as well as to the scientist. The best place to study nature is out of doors but as we do not have the opportunity to see the wild things there, the next place is the well-prepared museum. We are trying in a way to supplant the woods and fields by taking them up bodily and confining small portions of them in cases so that they may be readily seen and appreciated. This is the new idea in this work and is a great stride in the

Museum of Birds.



Museum of Birds and Mammals—The Work Room.

Museum of Mammals.

Museum of Birds and Mammals.

right direction. We are going to have all of the familiar forms prepared in this way and have already made quite a start in this direction.

A recently completed group of Rocky Mountain screech owls will serve as an example. This group consists of a large cottonwood stump which has really been a home of the owls, and five owls in various characteristic positions. It was cut down carefully and brought into the laboratory, where the owls were mounted and placed on it, and it was made to look as nearly as possible as it did in the woods. The owl does not make a home of its own, but appropriates the nest of a flicker or a natural cavity. A hole is cut in this stump so that the nest and eggs can be seen, and it is made as attractiv as possible. A study of this group will give the student some accurate knowledge of the habits of this owl. It will show him something of its home, food, habits and several other owl characteristics.

In teaching the student about birds or mammals, the greatest difficulty is to get him to give them life. Often he studies them in books and in mounted specimens and regards them merely as objects that must be studied, thinks of them as so many blocks of wood and gives them as little life and individuality. We are endeavoring to make the student love our wild friends, give them more attention and hence add to his own enjoyment and knowledge. As fast as possible we will place on exhibition all of the more common forms, arranged so as to show something of the habits and of the life history. As a general rule it may be said that in teaching we use the skins and mounted specimens for forms that are not

easily found and use the museum merely as a supplement to the field.

DESCRIPTION.

The museum has a good representativ collection of the birds of North America, and the mammals are being secured as rapidly as they can be obtained. The collection of mounted birds numbers two hundred and fifty specimens, most of them the larger birds of prey, of which the greater part are so mounted so that they will fit into groups when the accessories can be secured. Besides these there are over twelve hundred skins in the collection, all accessible to the students for study. A recent acquisition gave the museum the best collection of humming birds in the west. It numbers five hundred and sixty-two specimens and represents over two hundren of the five hundred and fifty known species of the humming bird. They are in the form of skins at present, but many of them will be mounted in the near future. There is enough material in this collection alone to furnish work for a year's study. Another of the recent additions is an albino, red-winged black bird. It is pure white with beautiful salmon shoulders and is a true object of beauty.

The mammals, which are mostly small forms typical of this locality, are represented by forty mounted specimens, one hundred and fifty skins, and a collection of skulls and skeletons numbering about one hundred and fifty. Some of them are in the rough, but they will be mounted as soon as possible. Already four have been mounted: A bat, small; a fine skeleton of the large fruit eating bat of the orient; a skeleton of a baboon;

and a human skeleton. A large snake skeleton is being prepared and will be on exhibition in the near future. It is a boa constrictor skeleton, over fifteen feet long.

Two very fine cases show the feather, the different colorations and how some of the peculiar markings have been evolved. The collection of birds' eggs is very complete; many of them are with the nests. There are over a hundred nests and among them are nineteen of the humming bird, showing the great variety of nests constructed by these small members of the bird group.

The collection of eggs numbers three hundred and fifty sets and furnishes a good study of evolution and protection. Some of the most interesting are the eggs of our larger birds. Eggs of all of the larger wingless birds are found, including casts of the eggs of the Moas and the Aepyornis, giant wingless birds whose heads towered some ten feet above the ground.

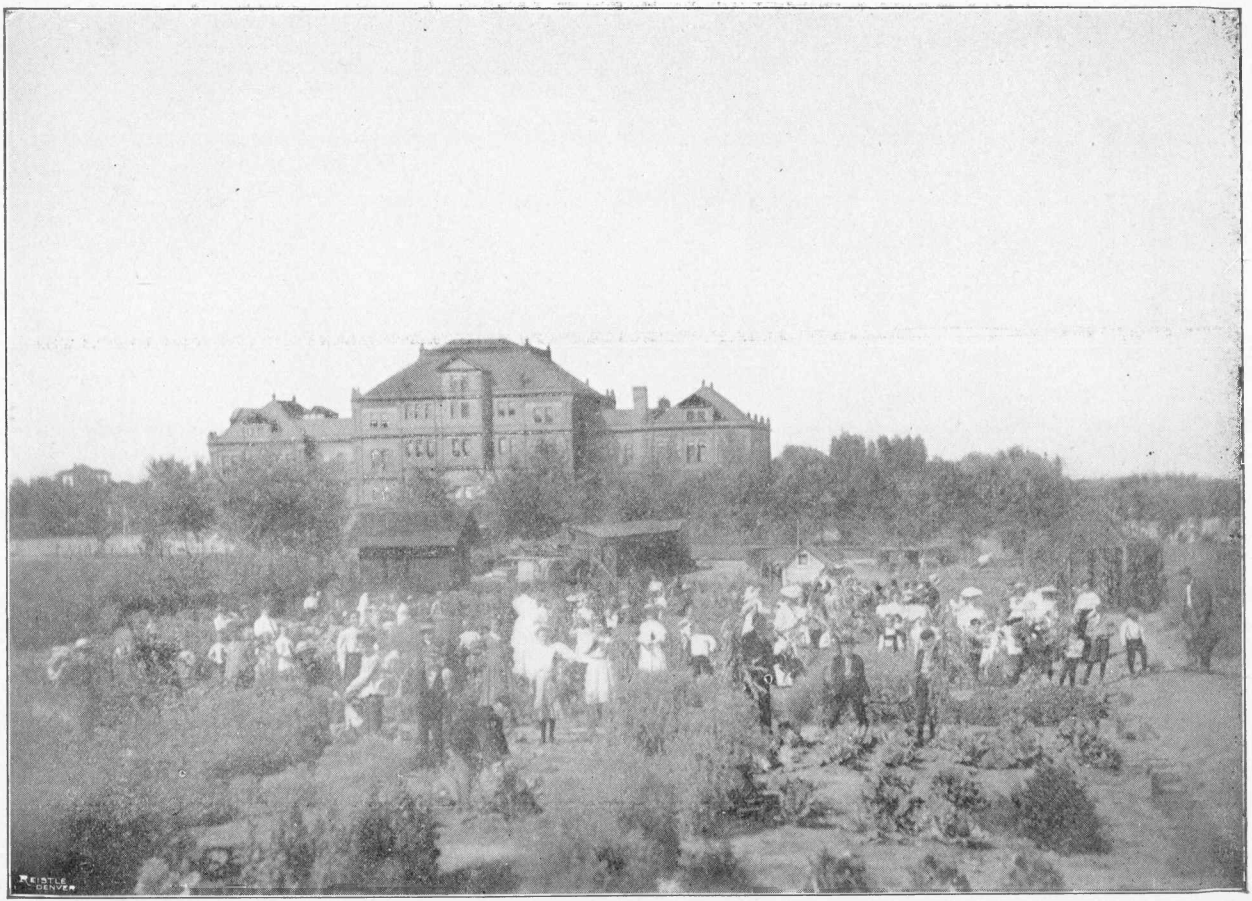
For convenience in mounting, casts are made of all of the mammals' bodies. There are over thirty of these casts now in the museum showing the head and the parts of the body used. A Papier-Mache manikin is provided for the classes in physiology. It is made so that all of the parts can be taken out and studied and is a great addition to the equipment. There is a dried body also, which shows the body of a man dissected and hardened, with all of the organs in position.

A series of casts are shown giving an idea of the heads of monkeys and the races of man. It consists of the following: Gorilla, male and female; Chimpanzee, male and female; Ourang-outang, male and female and young; Prehistoric man; Negro; Indian; Malay; Mongolian; Caucasian.

Museum of Economic Botany and Agriculture.

CURATOR—H. W. HOCHBAUM.

It may be said that the main purpose of the Museum of Economic Botany and Agriculture is to furnish illustrativ material for use in the teaching of Agriculture, Nature Study and School Gardening. In the teaching of these subjects it is essential that the objects under discussion are actually seen, perhaps handled, by the student. It is not enough merely to talk about soils, birds, or plants. These must actually be seen. If the teacher, for example, has soil samples where the student can feel and see for himself the points under discussion, the teaching will mean more. To talk about clay soils, loams or sandy soils, will not help nearly as much to a clear understanding of the uses of these types as when the student can feel and see for himself the various differences in the actual soil samples. So, in the study of plants, the actual plants must be at hand where the student may observe them. Many other illustrations may be found of the value of the material of this museum. The smaller agricultural implements and utensils that form a part of the collections are often brought into actual use to show the mode of operation or the principles that may be involved. Comparisons are also made with specimens of more primitiv origin or earlier forms of implements now in use. School gardeners while discussing the relativ thicknesses of seeds, shape, etc., may study the actual seeds in the museum. Nature students while studying the economic relations of insects,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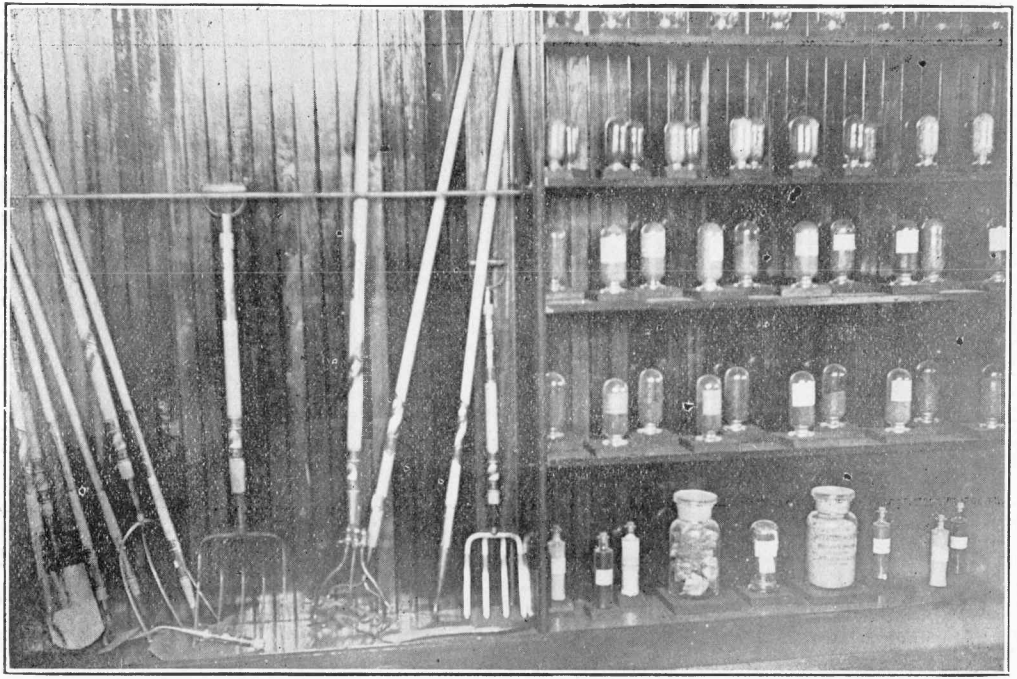
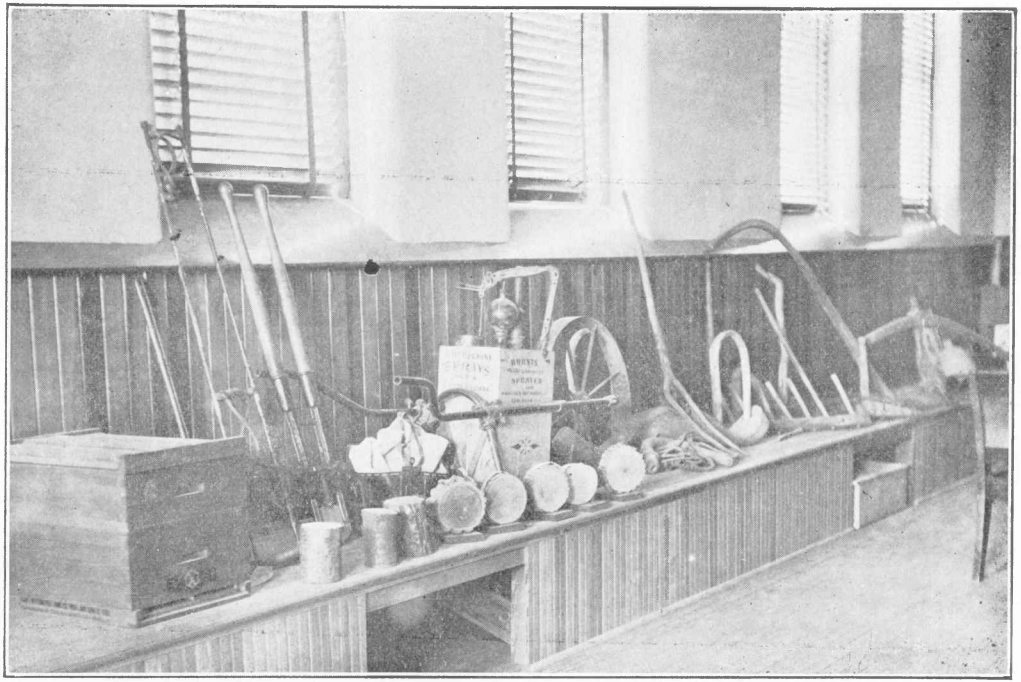


Museum of Elementary Agriculture and School Garden.



Museum of Elementary Agriculture and School Garden.

plants and animals, may draw actual specimens from the museum for illustration.

This museum comprizes two sections: An outdoor section and an indoor section. Outdoors, garden and field afford opportunities for the observation and study of plants and other factors of interest to the student of agriculture, gardening or nature study. Here soil is actually turned over, sown, cultivated, crops harvested, plants are propagated, bugs killed, bringing out the point that the museum, whether indoors or out, is not solely a place for the exhibition of museum material, but that wherever possible this material is handled and the museum becomes, in a way, a laboratory. Outdoors are grown very many ecocomic plants, both nativ and introduced. Ornamental plants so arranged so as to show their best uses in connection with the decoration of home grounds also form a large part of this section. Every year large numbers of new economic and ornamental plants are set out, and it may be said that here on the grounds of the State Normal School as varied a collection of plants may be found as anywhere in the State. The Campus is reputed to be the most beautiful in the State and the influence of its many beautiful trees, shrubs and flowering plants on student and public is surely a great one, showing how hardy, decorativ plants add to the beauty and comfort of a home. There are now about 300 species of hardy, woody, ornamental plants represented on the Campus and perhaps 2000 species of other plants of economic importance.

In the indoor section the following groups are to have places: A collection of nativ woods; nativ edible and

poisonous fruits and roots; nativ weeds; economic fungi; economic insects and life histories of the same; agricultural seeds, i. e. grains, grasses; forage crops, etc.; forest seeds; garden seeds; forest products, as oils, gums, dyes, shellac, etc.; agricultural products other than food, used in manufactures, as fibers, tobacco, etc.; fotografs illustrating the various agricultural industries, blooded cattle, horses, sheep, etc.; fotografs of birds, animals, plants and flowers in their nativ habitat; fetilizers, insecticides, and fungicides; the smaller agricultural implements from the primitiv to the most modern, together with fotografs illustrating their use; soil types, nativ and foreign, with relation to their economic importance; literature, old and modern, relating to agriculture; portraits of famous botanists and agriculturists; garden plants and fotografs of the various garden crops.

General list of exhibits in the Museum of Economic Botany and Agriculture, April 1, 1908: Thirty-two specimens of woods; fifteen specimens of fruits and roots; eighteen specimens of weeds; three specimens of fungi; five specimens of economic insects; 100 specimens of agricultural seeds; sixty specimens of tree and shrub seeds; 100 specimens of economic seeds, U. S. Dept. Agreculture; 150 specimens of garden seeds; fifty fotografs of live stock; eighteen fotografs of plants and flowers in their nativ habitat; forty-six samples of commercial fertilizers; eighteen samples of insecticides and fungicides; thirty samples of soil from as many states; forty samples of adulterated food and food adulterants; 2000 specimens in School Herbarium; 300 specimens in Wild Flower Herbarium; 225 specimens in Garden Herbarium; valuable bulletins and books.

Museum of Ceramics.

Museum of Ceramics.

Museum of Ceramics.

Museum of Ceramics.

Agricultural implements and utensils as follows: One potato sprayer; one garden sprayer; one garden seed drill and cultivator; one seed sower; one Keystone dehorner; one Sharples cream separator; one incubator; one brooder; sixteen garden hand tools, rakes, forks, hoes, etc.; one Babcock milk tester and outfit; three beehives complete; one collection of apiarian supplies, numbering thirty-five pieces; one wooden plow from Philippine Islands; one wooden harrow from Philippine Islands; one complete harness for same, yokes, ropes, etc.; one pitchfork from Philippine Islands; one ox yoke, American, used by pioneers in the State.

Museum of Ceramics.

CURATOR—Z. X. SNYDER.

The use of the Ceramic Museum is manifold. It has a historic significance; it shows the development of civilization, in a way, when the wares are arranged in a series from the primitiv peoples to the finest product in pottery making. It has an industrial meaning, since it shows the extended growth all over the world of pottery as an industry. It most of all is useful in giving the pupil a notion of pottery as a fine art. It is that particular kind of art that appeals to the sense of touch and muscle in reaching the deeper artistic feeling.

There are represented the following countries: Holland, Germany, Austria, Sweden, Belgium, Hungary, Italy, Spain, Japan, China, Mexico, England, Ireland, and America.

Over one thousand pieces are classified and installed in the museum, and are accessible for instruction and inspiration.

There are five series of specimens showing the evolution of a piece from the crude clay to the finisht product in the five great lines of ceramic industry and art. The first series is the evolution of a vase; second, is the evolution of a brick; third, the evolution of a piece of tile; fourth, that of a pipe, and fifth, that of a piece of terra cotta.

When one reflects the extent and reach of these five lines of ceramic activity, he is amazed at the volume of business in this country and the world.

The Biological Museums.

MANAGER—A. E. BEARDSLEY.

In the Biological Museums are included all specimens and exhibits of living things and the products of living things, excepting only man and the products of the activities of man; these products, on account of their great variety and importance are, for convenience, groupt together into a special section as the Museums of Anthropology. As thus limited, the biological museums comprize the following departments:

Museum of Mammals including mounted specimens, skins, and skeletons of mammals, together with specimens, models, charts, and fotografs illustrating their structure, their products, and their habits and modes of life.

Museum of Birds.

Museum of Reptils, Amphibians, and Fishes.

Museum of Mollusks.

Museum of Arthropods, including insects, spiders, crustaceans, etc.

Museum of Lower Invertebrates, including the starfishes and their allies, corals, worms, sponges, etc.

Museum of Physiology.

Museum of Economic Biology, including animals and plants which bear a special relation to the welfare of man, such as injurious insects, beneficial insects, poisonous plants, useful plants, etc.

Museum of Botany, including specimens representing plants, their forms, history, structure, and products.

Museum of Paleontology, including fossil shells, bones, teeth, and other remains of animals and plants that lived in earlier geological times.

The Physical Museums.

MANAGER—F. L. ABBOTT.

The materials comprized in the Physical Museum as outlined in this bulletin are not only the products of what are known as the Physical and Chemical forces, but also those products of the soil that are essential to the support of life. Further than this, it is designed to represent also, as far as is practical in this section, that highest type of thought, invention, as exprest in the various appliances serving to render man superior to his natural surroundings.

For the sake of convenience, first in classifying the material, and second in referring to it, these Museums are thrown into four divisions as follows:

1. The Geografical Museum containing agricultural products, manufactured products, and building materials, etc.

2. The Mineralogical Museum containing the products of the mines.

3. The Physical Museum containing the products of inventions, etc.

4. The Chemical Museum containing the elements and many of their combinations either as nature has made the combinations or as the compounds are made in the laboratory.

Museum of Geografy, Chemistry, and Mineralogy.

CURATOR—F. L. ABBOTT.

Believing, as we do, that the study of geografy in general should be the study (in particular) of the people —people in their homes and about their business—and the study of their relations (of control and adjustment) to their natural environment—believing this, we believe also, of course, in the use of a museum of specimens well selected to illustrate the various phases of the subject.

In the lower grades at least, educators are now fully agreed that something of the sort is absolutely necessary; the sense of touch is the final court of appeals for

Museum of Geography

all the senses, especially in the very young. And the same is far enough true in the upper grammar grades and the high school that the only change in procedure needed is a change of the emphasis to suit the more advanced interests of the pupils.

With this in view we would lay most stress in the lower grades on the manners and customs of the various peoples; and in the upper grades and the high school, we would most particularly lay stress upon the development of commerce and the industries; the significance of climate and topografy; and the social and political interrelations of the people. For such a treatment of Geografy (indeed it seems to us, for any treatment of geografy) to be adequate a museum is indispensable.

To illustrate these phases of the work in geografy as we conceive it, we should have a collection of the agricultural products of the different countries which help us to get a better conception of the climatic conditions of the various countries; in general like products like climate. A collection of the manufactured products shows us the multiplicity of the occupations of the peoples. Very important is a collection of the natural resources of the countries, such as our building stones, etc. To illustrate the forms of dress, modes of living, ways of traveling, kinds of architecture, and the natural scenery of the various parts of the world, pictures are very essential. Such pictures can be found in abundance in the illustrated magazines, of which there are a great number.

SUMMARY OF MUSEUM MATERIAL.

A. GEOGRAFICAL:—Five kinds of building stones;

eight Portland cement exhibits, showing material from which it is made; twelve gypsum and its products; three kinds of brick and materials from which they are made; cotton balls and seed; five specimens of beet sugar in its different stages of making; crude rubber; fifty pictures, unmounted; 1500 pictures in magazines (cataloged); ten coals and its products; oils, crude, from three localities; twenty-five exhibits Pueblo steel works, materials used; alkali, sample from field; model of Philippino home; five samples spice; three globes; thirty-five maps; three barometers; six erosion models; two sunshine indicators; astronomical lantern; cloud fotografs; metata; 100 marble specimens, polished.

B. MINERALOGICAL:—Fifty gypsum crystals, of many varieties; twenty-five quartz crystals; thirty lead ores; five manganese ores; twenty-five silver ores, two silver wires; thirty iron ores; twenty-five copper ores; ten zinc ores; two gold ores; five tungsten ores; twenty feld spar groups, crystals of several varieties; fifty rock forming materials (National Museum).

C. CHEMICAL:—Sixty elements that exist either in solid or liquid state; one fireless cooker.

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