MUSEUM

OF THE

Geological Survey of Alabama

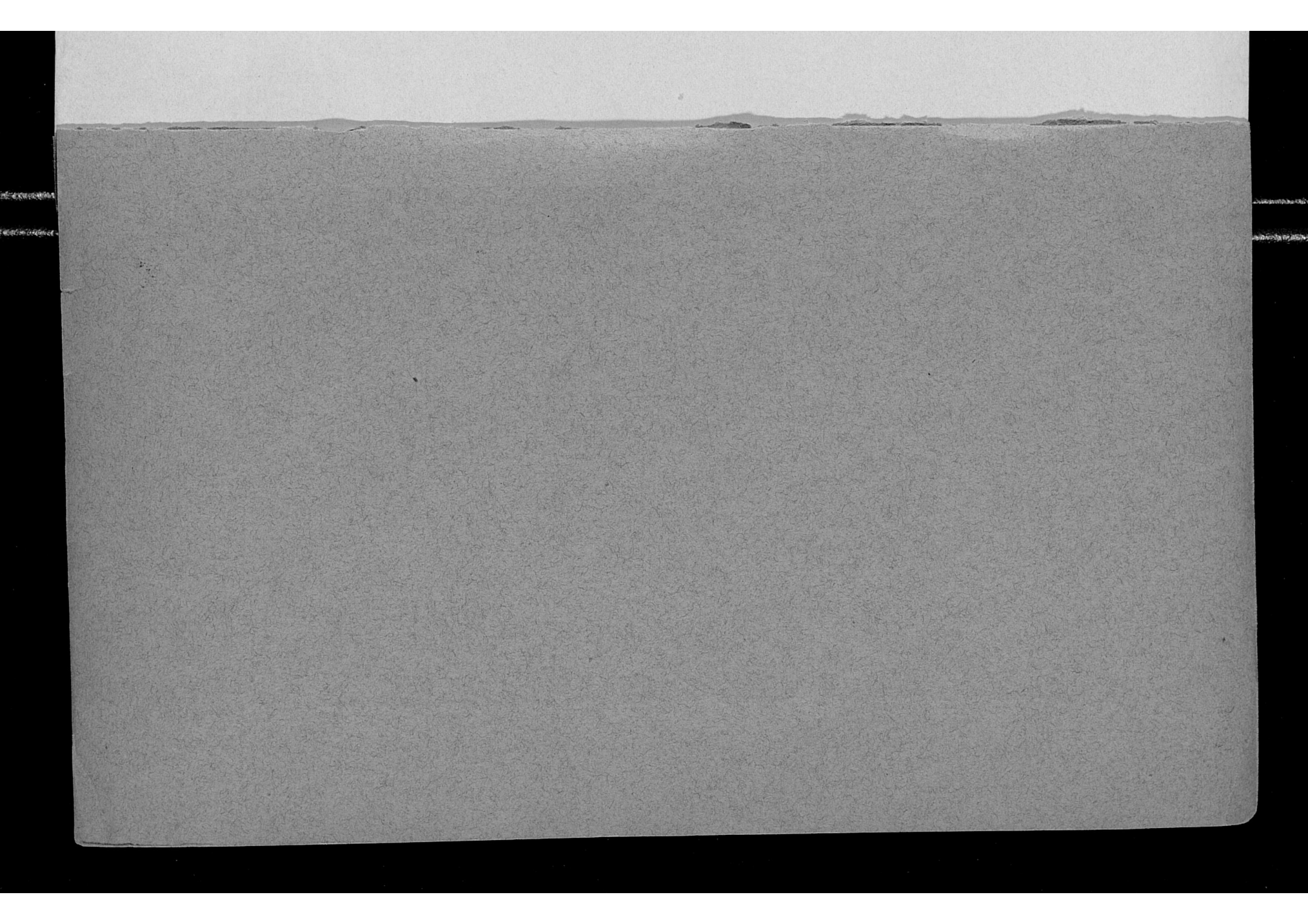
EUGENE A. SMITH, Ph. D., Director

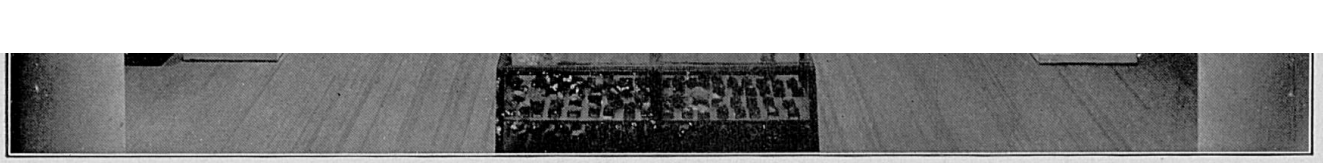
The Museum as an Educator

...BY...

HERBERT H. SMITH, Curator

THE WEATHERFORD PRINTING COMPANY
TUSCALOOSA, ALABAMA
MAY, 1912





Museum of the Geological Survey of Alabama—Main Exhibition Room

Museum of the Geological Survey of Alabama—Main Exhibition Room

EDUCATIONAL PAPERS. I.

THE MUSEUM AS AN EDUCATOR

THE MUSEUM DEFINED.

Presumably, when Mr. P. T. Barnum opened a stationary show in New York and called it "Barnum's Museum," he was not aiming a blow at science; but science felt it, and, in a measure, is feeling it yet. At that time real public museums were hardly known in this country; so Americans, very naturally, thought only of the bogus one. Barnum was not the first to misuse our time-honored name, but he was successful and was followed by cheap imitators who made matters worse. To this day, many persons suppose that a museum is "a place where they show curiosities"—specifically, dwarfs, bearded ladies and two-headed calves. With such an idea, is it any wonder that they are indifferent?

Fortunately for us, this absurdity is dying out, and every well informed person knows that the museum is not a catch-penny show. In point of fact, the old Greek word which has come down to us through the Latin has not changed greatly in meaning. The museum was, and is, a temple of the Muses, the home of learning and art. Painting, sculpture and music, history and science gathered in the old Greek temples—all that was noblest and best in a glorious civilization; there the great philosophers taught and authors read their scrolls and Homer was recited. A few centuries later the Museum at Alexandria was a library and university, the most renowned of its time.

It has been said, and truly, that museums cannot exist until the community has reached a high state of civilization; while men are occupied in the mere struggle for existence they have small leisure and less inclination to cultivate their minds. There were no museums during the centuries of turmoil that followed the destruction of the Roman Empire; there was none in England until after the civil wars, until the English were no longer satisfied with squalid country-houses and gross feeding and the bare rudiments of knowledge, but were reaching after

beauty and culture; there was none in America until the pioneer settlements had grown into rich cities and ordered communities. The Renaissance was first felt in Italy, and for two or three centuries that was the most enlightened part of the world; it is significant that museums were formed in several Italian cities, and they are the oldest in Europe.

Museums, then, mark a stage in civilization, and a very advanced stage; they do not come because a few enthusiasts want them, but because the community is ready. Of course there are plenty of men who can see no use in them; men who are not broad enough to comprehend that the world is advancing and needs such things now, though it did without them before. They use the old argument, "what was good enough for my grandfather is good enough for me." Nonsense! Your grandfather could jog on horseback, but your automobile is better and will do the journey in half the time. Your grandfather was satisfied with Yankee Doodle; your musical taste has been cultivatsd and you demand Wagner. Your grandfather was interested in potato bugs, and you want an entomological collection—or will want it as soon as you appreciate its charm.

We have come to use the name museum in a special way, for an institution devoted to natural science—geology, biology and their kindred branches; for convenience I shall keep to the restricted sense in this paper. But I should explain that the word has been, and is, used for many cults. The British Museum, at first, was a library and cabinet of antiquities, to which other things have been added. The Metropolitan Museum is an art gallery; the Confederate Museum at Richmond is historical; we have museums of textile arts, the Patent Office Museum and the Post Office Museum. All these have a perfect right to the name; they are not carried on for money-making and, assuredly, they are not vulgar.

Broadly speaking, a museum of natural history has three spheres of work: 1st, scientific; 2nd, economic; 3rd, educational. I shall only mention the first two incidentally; sometimes, indeed, the economic branch is largely relegated to other institutions. But I am bound to call your attention to one fact, and it cannot be impressed too strongly. The economic and educa-

tional branches spring from the scientific one and are nourished by it. We cannot teach or use science unless we have it ourselves, and we cannot have it without patient study. Well-arranged exhibition rooms are not mere matters of individual taste; they depend on well-arranged collections, the result of years of labor by specialists. The scientific work is out of sight, and a chance visitor may imagine that it is neglected or unimportant; in simple truth, the museum could not exist without it. The demagogue who urges that we should have *nothing but* exhibition rooms or public lectures or economic work is preaching an absurdity; he might as well say that a compass and drawing table are all that is necessary for an engineer and that he has no use for mathematics; he might as well expect a carpenter to work without tools or a farmer to plant without seed.

THE EDUCATIONAL MUSEUM.

Like everything else, the museum is an evolution. In its infancy it was little more than a collection, open to a few specialists but barred against the general public. The first exhibition marked an era in education. Of course, its promotors had no idea of this; they enjoyed looking at the specimens, they were good-natured and wanted to share their pleasure with other people; that was all. The means at their disposal were inadequate; some dark iittle rooms, shelves and cases which, fortunately, concealed more than they revealed. Compare this, for instance, with the American Museum of Natural History at New York. It is planned to cover four city blocks and already occupies a great part of two. Four stories are devoted to magnificent exhibition halls, nearly two miles of them, where every case is as nearly perfect as science and art can make it. In truth, the very richness of the place is bewildering; wiser persons go only to one hall, or two. Everywhere you see groups of visitors, quiet people, some fashionably dressed, but there is a good sprinkling of workmen with now and then a bare-footed boy; teachers lead their classes from one object to another; students work with note-book and pencil; here a school boy hangs over some case and perhaps you may see him comparing specimens which he has brought. In these halls the museum

has gathered the work of hundreds of skilled men, it has expended years of anxious thought and study and millions of dollars. They are strictly and solely educative. The rooms are *not* a gift to science; they are a gift *from* science to education and the world, and for this science has enlisted art, ingenuity, money, anything and everything that makes to her end—teaching. Any one who imagines that the naturalist needs these cases for his work has simply no conception of scientific methods. The study collections are out of sight, in laboratories and store-rooms on the top floor; plain cabinets and drawers contain far more specimens than the public cases, but but they are arranged compactly, for reference. There is no attempt to make things attractive; the naturalist wants well-preserved specimens, but an unmounted skin is better for his purpose than a mounted one and a tightly-closing insect-box than a glass-covered one. The American Museum is doing splendid scientific work, but *not* because it has exhibition rooms. It is significant, however, that this and other large institutions give more money to the educational branch than they do to the scientific one.

THE MUSEUM AN OBJECT LESSON.

Every experienced teacher knows the value of object-lessons. If you tell a kindergarten child that a plane triangle has three sides meeting in three angles he will have no conception of your meaning; show him a cardboard triangle and he will comprehend at once. The pupil in geography may read that polar bears and musk-oxen live within the arctic circle, but the words have only a hazy meaning; his real impression comes from a picture at the top of the page. Show him a bear-skin and he is interested; show him one of the splendid group cases in a museum, with savage white bears in their icy home, and the interest rises to enthusiasm. No doubt a visit to the zoological garden would be still more effective and a hunting trip to Greenland best of all. But we cannot take our classes all over the world, and we cannot often see zoological or botanical gardens or aquaria. The museum is accessible, it is convenient for classes or pupils, and it is attractive; people learn unconsciously, whether they want to or not. In other

Group of Prong-horn Antelope. Field Museum of Natural History, Chicago

Group of Prong-horn Antelope. Field Museum of Natural History, Chicago

words, the museum system is object-teaching applied to natural science and carried to the highest degree of perfection.

GROWTH OF THE MUSEUM IDEA.

From the dark little rooms of bygone days to the National Museum, or the American, may seem a far call; but one has grown out of the other just as surely as the oak grows from an acorn. And the constant feature of this growth has been improvement on every line—buildings, rooms, cases, specimens, arrangement, labels and, above all, methods. In our day a mineral or fossil intended for exhibition is carefully selected from perhaps a thousand others; all extraneous matter is clipped off, and the object is as clean as soap and water will make it; it is mounted on a block or placed in a tray, neatly and legibly labeled, and protected from dust by a tight case of the best and cleanest glass. Some fossil species—skeletons of mammals or huge saurians—are known only by single specimens, or one specimen only may be perfect. Of course, such an object must be kept in one museum; formerly the world at large could know it only by pictures and descriptions. The use of plaster casts has made it possible to reproduce these treasures of science for other museums; a score or a hundred may be made from a single specimen, and for educational purposes they are just as good as the originals. An extinct species is often known from fragmentary specimens, but by studying a large number of these the naturalist can reconstruct the creature in his own mind. It remains only to reconstruct it in a drawing or a plaster cast; this has been done many times, and the resulting models are invaluable for our exhibition rooms. That useful substance, plaster, also gives us relief maps, models of volcanoes and glaciers, geological sections and so on.

TAXIDERMY AND GROUP-CASES.

The old-time naturalist was his own hunter, and often a very good one; but he was also his own preparator, and almost always a very bad one. With the demand for better mounted specimens came taxidermy—at first a trade, but now a fine art, almost worthy to stand with painting and sculpture. The ob-

ject of a modern group-case is to show birds or animals exactly as they would be in their native haunts; a forest home as the hunter sees it sometimes, but as you and I can *not* see it except by rare chance or infinite care. Portrait painters study faces at their leisure, in all lights and under all conditions; but to catch the finer characters they must have many sittings. Animals, too, have character and expression, and it is far more difficult to observe them. The naturalist cannot choose place and time; he must devote weeks or months or years to his task. With softest footsteps and every sense alert he steals to some point of vantage, for these are timid creatures; a waft of air may betray him, or a broken twig, and all his care is lost. If he does glimpse the scene it is through a tangle of foliage that he dares not brush aside; quick eye and quicker camera are busy for an instant and then—his models have disappeared; to all appearance there is not an animal within a thousand miles. If the man is a true artist he will return again and again, watching for chances, studying every detail, absorbing the picture until he has made it his own; then it may go down to the ages.

It speaks well for such enthusiasts that they rarely disturb the home they have studied; other individuals of the species will serve the purpose as well, and even these are only killed because they must be. Then the taxidermist—who may be the same man or another—takes up the task. No gentleman is more carefully measured for the coat which he will wear than the forest creature is for the coat that is to be taken off. Generally a single opening is made and the skin is taken off as a lady removes her glove, but more carefully, to prevent stretching. A plaster cast of the carcass is made, sometimes in sections if the animal is a large one. In a final visit to the home scene, samples of earth and plants are gathered; these are to be reproduced in papier maché. Sometimes, if the den or nest is not too large, it is taken away entire, or parts may be taken. Foot-prints are copied in plaster; if the animal is carnivorous, refuse bones and feathers are picked up after noting their exact positions; dead mussel-shells, fragments of nuts and gnawed twigs are preserved if they are part of the scene, or the root of a tree is dug up if there is a burrow beneath.

Most of the old-fashioned "stuffed" animals were caricatures; our modern taxidermists slip a skin over the plaster mold, a vast improvement. But the finer touches may go on for months, and the artist always has photographs before him; every bit of the skin is manipulated, every swell and fold and feature; moods are depicted in tense muscle or snarling lips; hardly a hair is left untouched. Meanwhile the accessories—plants, rocks, ground or water—are built in by trained modelers. A dust-proof case of suitable form and size is ordered; for a large group, this alone may cost several thousand dollars. At length the result is placed in the public rooms—an exact reproduction of animal home life.

It is folly to speak of such an exhibit as a "show." Attractive it is, but attractive because it combines scientific method with the highest art; and it teaches as nothing else can, because it appeals to eye and understanding alike.

A museum like that at Washington may keep a whole corps of taxidermists in its employ, reinforced by a corps of modelers. A very large case—say of musk-oxen or giraffes—may be the work of years, with several arduous expeditions; and thirty or forty thousand dollars will not cover the expense.

I have dwelt on these group-cases because they are, perhaps, nearer perfection than anything else in our exhibition rooms. Almost equally fine are some of the ethnological exhibits, figures of Indians modeled in clay. In other departments various devices are used. For example, preserved fish specimens soon lose their brilliant tints, though they serve perfectly well for study. Many museums now show casts of fishes and batrachians, taken from fresh specimens and colored to the life; these, of course, are useless for anatomy and they do not show microscopic surface characters, but for the ordinary observer they reproduce the living creature. A "biological case" of insects depicts the life history, eggs, larvæ in different stages, pupa, imago, food-plant, nest, burrow or coccoon, and destructive parasites; if the species is injurious to crops, such a case may have special value for the farmer. Enlarged models of insects are a recent and useful addition. Shells are attractive always, but we supplement the conchological collections by sections and papier-maché models. Large crustacea are mount-

ed to show their structure, dried star-fishes and sea-urchins are placed beside drawings of the curiously dissimilar young. For years such objects as jelly-fishes and sponges could not be shown at all; now they are imitated, fairly well, in glass; and we have enlarged glass models of microscopic creatures. Attempts have even been made to show coral-reefs and wave-washed rocks, teeming with life. Bear in mind again that all these things are for popular education. The naturalist, with his microscope and dissecting knives, with his patient field studies, his camera and note-book, has no need for such artifiicial aids.

LABELS.

The label may seem a very simple matter, but labels have been improved almost as much as cases have. At first they were written slips of paper, often out of sight or illegible and, at most, giving only the Latin name and the locality. Then the English name was added—a concession of pedantry to common sense. But the public wanted to learn something more than the name, so a line or two of information was put in. Now we have the large descriptive label, not written, but printed in clear, bold type, so that it can be read across the case; in effect it is a short popular lecture about the objects shown. It was Dr. Baird, I believe, who said that a public museum should be "a collection of labels with specimens to illustrate them." From one point of view he was right.

METHODS.

The finest exhibits may be spoiled for educational purposes if they are not properly arranged and used in the right way. Here the changes have been well-nigh revolutionary. Naturalists, like other people, make mistakes; like other people, if they are sensible they draw lessons from their own failures. For instance, all the older museums were encumbered with cases which were good in their way, but which, from an educational point of view, were worse than useless; they were there because museum men had not learned to put themselves in other people's places. A naturalist, working for twenty years, perhaps, had accumulated a very fine collection; he was proud

Enlarged model of a Dragon Fly in the Milwaukee Public Museum. By courtesy of the Museum

Enlarged model of a Dragon Fly in the Milwaukee Public Museum. By courtesy of the Museum

of it and delighted in showing it to his friends. Nothing seemed more natural than to place the whole on exhibition and so let the public get the benefit of it. But the naturalist forgot that the public could not see with his eyes and appreciate with his mind. He was a trained specialist, delighting in nice points of structure, relations and differences of species, a thousand and one things that the public did not notice at all. He had brought his specimens together one by one, examined and re-examined them until each was an old friend, to be recognized at a glance; he knew that this species was exceedingly rare, that one group was the most complete of its kind in the world and another had been monographed by a master. The public had no such familiarity and, when the specimens were ranged in a case, could see nothing but mass; eye and mind could not take in the details simply because there were so many of them. Now we show only a small part of the collection, species remarkable for beauty or interest, and the tendency is to eliminate more and more.

Naturalists erred, also, in crowding the shelves and so confusing subjects; the simpler an exhibit is the better for its purpose. An ideal case would be devoted to one subject only, having enough specimens to illustrate it, but no more; that is one reason why group cases are so attractive. We can only reach the ideal here and there; but we can group the objects and so keep them from spoiling each other.

It may be a question whether our larger museums do not, sometimes, confuse by trying to do too much, to illustrate too many subjects. We may epitomize geology or zoology in a single text-book, but it is for study, to be digested during several months; the beginner who tried to read it through at a sitting would only find himself bewildered. Naturalists themselves know how hard it is to cover every branch; in our day they are all specialists. Yet a dozen curators, each a specialist in his own department, will unite their exhibits in a single museum, and the average visitor expects to see the whole thing in one afternoon. Of course, this is beyond any man's power; he enjoys two or three rooms, but the feast ends in surfeit and weariness. With more experience he will learn to divide it up; but we ought to make it enjoyable from the first day. It is a

pity that we cannot restrict visits, for the time being, to a part of the museum; sometimes I think that we shall find means of doing so. The visitor would have quite enough to satisfy his mind, he would see more and learn more and would certainly enjoy himself better. The little Post Office Museum at Washington is a gem in its way; personally, I enjoy a visit to it more than I do a walk through the great National Museum. Not that I am particularly interested in post-offices, and I certainly am interested in many things which the larger museum exhibits. But the Post Office collection relates to one subject only—post-offices; with that always in mind, you understand every object and examine it carefully without the slightest fatigue; the hall is like a very entertaining book. I can imagine that each department of the National Museum would be more effective if it were separated from the others by space or time. Quite possibly that may be the next great improvement.

One more feature should be mentioned. Quite often, if a large party or a school class comes to the museum, some curator walks around with it, explaining cases, calling attention to interesting things, perhaps taking out specimens and letting pupils examine them one by one. Of course this adds immensely to the interest, and such little scientific lectures, coming from an expert, are really valuable; besides, the visitors linger about a few cases and really see them instead of catching a hasty glance. Quite recently some museums have employed instructors who are at the service of all visitors; the plan has worked well and, no doubt, will be widely adopted. As for guide-books, those were introduced long ago; but a guide-book cannot answer questions.

Mr. Chapman, of the American Museum of Natural History, told me of a visit from Hellen Keller; she was quite a young girl then, and came with her teacher. Mr. Chapman was showing some birds—I use the word advisedly, for this wonderful child could see in her own way. He took out a bird of paradise—a mounted specimen—and Helen passed her sensitive fingers over the plumage. "It is a crown of glory" she said. Could any description be more graphic?

THE MUSEUM EXTENSION IDEA.

Almost every museum man likes to help other naturalists, and he likes especially to encourage beginners; so another form of museum influence has grown almost spontaneously. For years such work was carried on without any fixed plan, just as occasions offered; even so it was of very real value, and I question whether it has not done more to develop a taste for nature-study than the exhibition rooms themselves. Some one sends a fossil or shell and asks for information about it; the specimen is returned, neatly labeled and probably with a letter of information. The high school has a collection—objects brought in by the pupils—but they are all in confusion and tend rather to discourage than to promote enthusiasm; the museum is appealed to, the collection is arranged and very likely the class gets a free lecture on field work. Some bright boy catches a few butterflies and tries to preserve them; he has an inborn taste for the work but is discouraged because he does not know how to mount and classify his specimens; the naturalist befriends him and a new amateur collection is started. Such things happen every day, and museum curators give more time to them than people would imagine. All this may seem trivial and, in truth, a single case would not be worth mentioning; but a thousand cases, taken collectively, amount to an important movement. This is, indeed, the undercurrent of museum influence, none the less strong because it is unseen.

Of late years the outside work has been more or less systematized; in other words, there is a clear effort to carry museum education beyond the museum doors. That the movement is in its infancy we cannot doubt; that it must go through an experimental period and meet with some failures is certain. But its growth has been wonderful. Thirty years ago the American Museum prepared a few loan exhibits—specimens which were lent to schools on application and for limited periods. Other institutions improved on the idea and established regular circulating cases which traveled from school to school; in particular instances collections were even given outright. By this time all the city museums had lecture courses, some for teachers, others for school classes, and the latter might be

in the museum lecture-hall or in the school. The public responded, as it does to generous efforts wisely used. In some cities the interest, coming after years of apathy, was simply astonishing. I saw such an awakening at Pittsburgh; it was so sudden that it surprised everybody and so universal that the very air seemed full of it. School children—some of them the merest tots—were gathering specimens; parents and teachers were enthusiastic; the papers were full of the movement and our museum was beseiged by reporters. Some of the Grammar School and High School boys started a nature-club—the "Andrew Carnegie Society"—meeting in a room which the Museum Trustees opened to them and making weekly collecting excursions. I may tell of that club in another paper; it is enough to say here that it did and is still doing noble work; that it is as enthusiastic as ever, with 250 members and annual meetings where the boys may hear speeches from a governor or two and the governors certainly hear the boys, and learn something, too. Pittsburg teachers "swear by" the Andrew Carnegie Club; it is a feature in the school system and has a regular place in the museum reports.

Our cities recognized the value of museums long ago, and they are recognizing the new departure. The latest and strongest proof of this comes from Chicago; twenty years ago the whole country would have been ringing with it, but twenty years ago nobody would have planned such a thing; the world had not advanced so far. I quote from the Report of the Director of the Field Museum, dated Jan., 1912:—

"The announcemet, late in December, of Mr. Norman W. Harris' important contribution of $250,000 for the extension of the work of the Museum into the public schools of Chicago was greeted by the press and people of the city with marked concert of congratulation. The plans for carrying out Mr. Harris' wishes have not as yet been more than outlined, but the project is receiving the careful deliberation of the director, the curators of the Museum and the officials of the Board of Education. It will take several months to arrive at even a tentative working plan. This rare donation to the cause of education and public welfare will give life and light to the routine of the schools, instill love of nature into the scholars, make for good citizenship and constantly increase the friends and frequenters of the Museum. It is a wise, far-seeing and perpetual benefaction."

Here, in dry, official language, is chronicled an event which

Cast of Skeleton of Megatherium, an extinct sloth-like animal as large as an Elephant
By courtesy of Ward's Natural Science Establishment

Cast of Skeleton of Megatherium, an extinct sloth-like animal as large as an Elephant

By courtesy of Ward's Natural Science Establishment

means more than a new university and far more than the attainment of the North Pole. It is not only that the gift is the greatest of its kind; it shows that the community has recognized a new force and knows its value; that one philanthropist, at least, is ready to devote a fortune to it. A Chicago man, even a rich and generous one, does not give away a quarter of a million without very good reason. Results are sure to justify the act; they may end in revolutionizing education so far as natural science is concerned.

The key-note of museum extension is helpfulness: we must be ready and eager to aid individuals, schools, communities. More than that, we must advertise our willingness; people hesitate to "take the time" of a curator unless they know that he is there to have his time taken, that it is his duty and pleasure to serve them; metaphorically, the sign "no trouble to show goods" should be posted all over our walls. And it is not enough to encourage those who come to us; we should strive by every means to awaken interest and foster it, until people love nature as we do.

THE MOVEMENT IN THE SOUTH.

Agricultural communities are the last to feel a world-movement. For years, the interest in nature-study has been spreading like a great wave; in Europe, in the Northern and Pacific states, it is seen everywhere; but here in the Southland we hardly know that such a thing exists. It is not that we are less progressive; it is not, in the least, because our people are less intelligent or less appreciative. Taste and aptitude are exactly the same as elsewhere; once awakened they will spring into vigorous life. And the impulse must come from museums just as it has come in other sections. Our people are more or less indifferent now; a few years hence they will wonder at their own indifference. For, in nine cases out of ten, a *community* does not know what it needs until it gets it; a few *individuals* see farther, and they know, and give their lives, perhaps, to supply the need; then people are quick to use the gift and wonder how they did without it. In an isolated region the farmers are apt to oppose a new railroad; but if a few enterprising men put the road through the farmer's crops are moved, the farmer's family

is better off, his children go to school and college, the whole status of life is raised. That is exactly the condition of our states in regard to museums; they see no particular use for them—in a word, are indifferent. Do other communities think as we do? Let the facts speak.

APPRECIATION OF MUSEUMS.

Forty years ago New York had a small natural history museum, supported by the city. It occupied an old armory building in Central Park and was more or less under the control of ward politicians—as far as they cared to control a thing that gave them neither jobs nor votes. However, the place had a curator who did what he could; he saw the importance of large casts of extinct animals and, with some trouble, got an appropriation for making them; an English expert was employed. Of course, his work-room contained a large number of unfinished objects—they had already cost $10,000, I believe. It happened that the modeler was absent when a new park commissioner came along; he saw the littered room and instantly ordered workmen to "clear out this rubbish." That and a few other occurrences of the kind were too much even for New York—and those were the days of Tweed rule, when almost everybody cringed to the "bosses." The American Museum Association was formed, and it bought land outside of the park so that it might be forever free from politicial interference. Its trustees were prominent citizens; the president was a millionaire banker and for years he acted as director. Today this museum is the greatest in America, not even excepting the National; millions of dollars have been expended willingly for popular education, and practically all of it comes from individual donors; the Board of Trustees includes nearly all the multi-millionares of New York. Do hard-headed business men give their time and money to an institution unless they are convinced of its value? And nobody who sees the well-frequented rooms, nobody who watches the crowd of teachers or children going to a lecture, can doubt that they are right.

Mr. Marshall Field was a merchant of Chicago—one of the most successful in the world and the first to plan and carry on

a mail-order system. He gave some million dollars to found the Field Museum—an institution that Chicago is justly proud of. Only a few years before that gift, a Chicago rich man wrote to me:—"Our city has enough to do rebuilding itself after the fire; we have no use for *fossils.*" The last word was underlined to emphasize his scorn of such things. Today the Field Museum has 120,000 fossils on its catalogue and is sending expeditions after more.

Measured by the census, Milwaukee stands in the second rank among American cities. It has a thriving public museum, supported mainly by a special annual tax authorized by the state and city governments and based on a fixed proportion of the assessed valuation of taxable property in the city; at first the limit was fixed at 1-10 of a mill on the dollar, but in 1897 this was raised to 1-7 of a mill; I have no recent figures at hand, but in 1907 the sum thus provided was $28,797. That is, the museum is assured of funds, not only by special appropriations but by special tax, and this by act of the legislature in one of our most progressive states. Nor is the tax a severe one. It does not touch salaries, and poor men really pay nothing.

Having thus substantially shown her appreciation of the Museum, Milwaukee might have folded her hands. But in 1884, when $12,000 was needed to buy a collection, the amount was raised by popular subscription; since then several other collections have been bought in the same way. In his report for 1906-1907 the Director says:—"Donations of specimens and collections have ranged from the bequest of Rudolph J. Nunnemacher of his collection of 1,815 objects, inventoried at $70,030, and of $10,000 for its increase, to the butterfly or dead bird brought in by a primary school child." *

---

* The Director of the Milwaukee Museum, in a recent letter to the Author, said:—"We are preparing to do a good deal in the way of education; not but what we have been doing a fair amount, but that is small compared with what we intend to do. A few months ago we appointed a Curator of Education, who will come to us in July. By fall we expect our addition to the building to be in commission, with a lecture hall seating something over 750 and one, or perhaps two, smaller lecture halls, so that we are going to push the educational end of our work, reaching the grammar school children, their teachers, high school pupils, various more or less selected groups of the public and the general public. I enclose circulars of our Bird Class and Botany Class."

THE TRUE VALUE OF MUSEUMS.

Granting all that I have urged; granting that museums are vastly improved, that millions have been spent on them, that they do educate the people and educate without weariness; granting that they encourage amateurs and awaken nature-love in our children and give pleasure to thousands and are thoroughly appreciated; there still remains an argument against them so plausible that it has deceived very intelligent people. Consciously or unconsciously, I believe it is in the minds of many when they are urged, as individuals or as legislators, to aid in our work. A thinker may put it something like this:—

"Museums and nature-study are good in their way and satisfy refined tastes; but, after all, they are luxuries; if they mark a high stage of civilization it is because civilization breeds luxury. It would be unwise to tax the community for their support, because the community can do without them very well; only a few people want them and, in strict justice, they themselves should pay for what they get. Those gentlemen in New York and Chicago are wealthy and can afford to gratify their own tastes while giving pleasure to other people; our case is different. In such matters we should be slow in imitating a state like Wisconsin and a city like Milwaukee; some of their ideas are decidedly dangerous."

I frankly beg the gentleman's pardon—he *is* a gentleman—for paraphrasing his objection by putting it into the mouth of—let us say—a "professional" politician. It is necessary for my argument.

"If you fellows want to catch bugs and dig fossils you're welcome to the job; of course *I* think you are cranks, but that's your lookout; you don't hurt *me* any. When you ask me to pay for your rubbish, that's another matter entirely: I'm no such fool. Why, my constituents would kick if I gave a dollar. Those plutocrats up in New York and Chicago can build museums if they want to; I suppose they've got to have some kind of plaything and it may as well be that as anything else; but down here we don't throw away our money so freely. Wisconsin? That's the state where those fool bolters live, aint it? Come to think of it, your Milwaukee had a socialist mayor; no wonder

Model of Stylonurus lacoanus, a gigantic crustacean of the Devonian, as restored by Dr. Beecher
By courtesy of Ward's Natural Science Establishment

Model of Stylonurus lacoanus, a gigantic crustacean of the Devonian, as restored by Dr. Beecher
By courtesy of Ward's Natural Science Establishment

they have a museum. That rot about education and nature don't catch me one little bit. *My* boy is going to a sensible school and he'll grow up to be an intelligent citizen like me."

Of course such words refute themselves. But observe that, in substance, they are exactly what the gentleman urged; the difference is in language and manner. If the cad is wrong so is the gentleman; if both are right then all that I have been urging is wrong, and museums and education in nature-lore are not worth striving for.

In point of fact, each *thinks* that he is right, but both are wrong because the reasoning is based on a false premise. Begging the gentleman's pardon again—for he is not conscious of it—he is in very bad company; his is the old plea of ignorance against enlightenment, and a few years hence it will pass into deserved oblivion, like all ignorant thought. It is obselete even now; if our gentleman wishes to be in the fashion he should change his ideas.

We Americans are prone to measure the value of everything in dollars and cents. Well, it has been proved over and over again that science makes the world richer. Geology and mineralogy are indispensable for the mining engineer; entomology is yearly saving immense sums for the farmers and—what is far more important—is teaching us to curb disease by destroying the insects that carry it; our rivers are re-stocked with fish, our oyster-beds preserved, our game and fur animals saved from extinction, all through scientific methods; and so the list might go on for pages. Our captains of industry see this plainly and are employing hundreds of scientific experts; every large metal-plant or foundry has its chemist and every mining enterprise its geologist; nearly all the great wholesale drug houses have herbaria, often very extensive ones, with skilled botanists in charge. To put the argument in a nut-shell, our vast material progress is the direct or indirect result of scientific study. The state gives some money to science and individuals give far more; but if they gave ten times as much they would not be paying a hundredth part of their debt.

Such arguments are unanswerable when urged for the scientific and economic branches of museum work, but they hardly apply to the exhibition rooms or to museum extension. For these

stand on a higher plane; they give something better than money, something more valuable to the man and the state. This, then, was the mistake of gentleman and politician alike; they assumed that nature study and museums give nothing because they do not give in coin.

Education does, indeed, fit us for the struggle of life, but it does more; it makes for a higher civilization, a nobler and happier community. Even money is good only for what it will give, and it cannot give everything or gauge everything. Can you measure in dollars the value of Socrates or Marcus Antoninus or Goethe or Shakespeare? Can you estimate the money worth of the Pantheon, the Sistine Madonna, the Venus de Milo, the Cologne Cathedral? Is a city any the poorer because it pays for a fine building or a public park? Are good books and gems of oratory valueless? Do our young people learn music and dancing merely to turn their accomplishments into dollars?

Because people love literature and art, it does not follow that literature and art are mere luxuries. The world cannot do without them any more than it can do without railroads and schools; in a thousand ways they build up civilization and make us happier. Side by side with these, her sisters, science has been growing and spreading and working for good. With the popularization of natural science has come a love of nature study for its own sake; it is a cult, with an army of votaries all over the world. This is its real value, that it enlarges and ennobles the mind and so makes for a higher and yet higher civilization. The mind so ennobled, has no room for the old, sordid thoughts; the good drives out the bad. If we love beauty in a picture or poem we want it in our daily life; if we have learned to revere truth in nature we shall carry it into business and politics.

A CONCRETE EXAMPLE.

In 1890 the city of Pittsburg was already one of the richest in America. Its people were good-natured, and generous in a lavish fashion; some were men of learning and worth; but, in the main, the community was given over to money-making. The school system was fairly good and there was a struggling university; a few naturalists had united to form a scientific

society, but it barely existed and had no museum; there was no large public library. Rich Pittsburghers, if they could, moved to New York or had winter residences there; they regarded their own city simply as a workshop, a kind of necessary evil.

Soon after this time, through the munificence of Mr. Andrew Carnegie, the Carnegie Institute was opened; it combined a library with an art gallery, a music-hall and a museum. Mrs. Schenley donated land for a large public park, and Mr. Phipps added a splendid conservatory. I have already spoken of the wonderful awakening which followed, but I have not told how it spread to everything and transformed the city. The schools were vastly improved; the university took on new life and had to seek new quarters; popular musical taste rose from dance-hall to orchestra and opera; almost everybody wanted books, and first-class lectures were crowded. More than that, the people suddenly became aware that they owed a duty to each other, and they set their shoulders bravely to a score of needed reforms. Now Pittsburg is a centre of activity in sanitary and tenement work, the fight against tuberculosis, life-saving in the mines and so on; from about the worst governed city in America it has become a fairly good and clean one. Best of all, the people, rich and poor alike, are proud of their own progress and mean to go a great deal farther.

I do not say that all this was owing to the Institute and Schenley Park, but I do say that they were the main influences. One thing about the Institute is well worth noting. In the outset the museum was regarded as a mere adjunct of the art-gallery, of little public importance; only a small part of the general income was devoted to it. But when the halls were opened it was found that the museum drew two people where the pictures attracted one; its rooms were crowded; four or five thousand visitors in a day was no unusual number. From the first, also, it was noticeable that plain people, professional and business men, workmen and their families, gravitated to the museum rooms; fashion was there, but, in the main, society folk preferred the art-rooms. Naturally, there was a small struggle for control of the funds; it ended in an equal division between the two departments. Today, I believe, the masses have a better appreciation of art; but, on the other hand, science has plenty of votaries in the society clique.

OTHER ASPECTS OF NATURE STUDY.

One other aspect of nature study should be mentioned. Education is not a mere accumulation of facts; it is, or should be, a training. Mathematics are valuable partly because they give keenness and precision, history because it tells us how to reason from events, art because it cultivates the sense of beauty, and so on. Natural history trains our powers of observation as nothing else can, and it teaches us to reason from the known to the unknown, to classify and distinguish—an ability of more value than a thousand mere facts.

It should be remembered, also, that nature-study is a healthful pursuit, giving plenty of exercise in the open air, under the best conditions and with keen interest to keep the mind awake. Naturalists are healthy men and they are almost proverbially long-lived. I remember a remark of Col. Nicholas Pike—soldier, civil-service worker, traveler and naturalist. At the age of 75 he was just starting on a walk of 200 miles with his wife, a lady nearly as old and quite as enthusiastic as he was. I begged them not to attempt too much, but Col. Pike only laughed. "Why, my tramps keep me healthy," he said; "I should have died long ago without them."

THE MUSEUM OF THE GEOLOGICAL SURVEY.

The Museum of the Alabama Geological Survey stands in a peculiar position. An outcome of the Survey, it is, by law, an integral part of the University of Alabama; its building, the finest museum edifice in the South, was erected at the cost of the State; its collections, unexcelled south of the Ohio, are largely derived from the Survey, but with important additions from other sources and from its own work. Its relations, its objects and its duties are therefore complex. It is, at the same time, a survey museum, the home and workshops of survey men, a university museum, bound to do its part in university education, and a state museum, with obligations to the entire commonwealth. At present it has no funds of its own, but is supported mainly by the Survey, the University defraying certain expenses.

The great museums are in large cities and hundreds or

Igarot Pottery Makers, Philippine Islands. Field Museum, Chicago. By courtesy of the Director

Igarot Pottery Makers, Philippine Islands. Field Museum, Chicago. By courtesy of the Director

thousands of people visit them every day; they have rich endowments or wealthy patrons and can afford to do their work on a magnificent scale. Our building is on the University campus, near a small city; the educational work of our exhibition rooms extends to the students, the citizens of Tuscaloosa who come often, and outsiders who come at infrequent intervals. Manifestly, it would be absurd for us to attempt rivalry with the American, Field or Carnegie Museums, or the Public Museum of Milwaukee; if we could afford them, we would be foolish to show twenty-thousand-dollar group cases or long series of huge fossils obtained by special and expensive expeditions. But it is no less manifest that we should be efficient in our special work for the University. To do this we should spend thousands where the great museums spend millions, and have a few things where they have a great many. As a matter of fact, our rooms are constantly improving, though they are yet far from what we hope to make them; many of the cases are arranged for convenient reference rather than as object lessons. The most urgent needs for these rooms are some large casts, a series of glass models, two or three group cases of birds, and table-cases for the better exhibition of small specimens; all these can be obtained for a few thousand dollars, and we may reasonably hope to have them before long.

So much for the exhibition rooms; but in the other branch of work we accept no such minor position; the youngest of American museums this is, perhaps, the most ambitious. The great city museums are doing first-rate extension work, but, so far, it is confined to the cities themselves and their immediate vicinities. We believe that ours is the first definite attempt to extend museum influence over an entire state. The truth is, our situation made such work imperative; we could not reach a large number of people through our exhibition rooms and had to do it in some other way.

Our first move was to reach the public schools. Every museum has duplicate specimens, which may be used for exchange, but most of them are never used at all. We had a very large number of fine duplicates and we planned to give some of them to high schools and similar institutions. Such schools often have small collections, generally bought from dealers;

but, almost always, the specimens are inferior and there are not enough to illustrate even the main groups. From the first, we determined to give large and fine sets, carefully labeled and classified. This meant the selection and arrangement of many thousand specimens for each school, and the whole had to be done in the intervals of regular museum work; of course such a task could not be accomplished in one year, or two. The plan, therefore, was to make the gift by instalments, to go on from year to year indefinitely, and to issue such sets to 25 schools. Each instalment was to represent, as far as possible, one group. Each specimen was to be numbered to correspond with its label, so that, if they were accidentally separated, they could easily be brought together again even by an unskilled person.

The first instalment sent out consisted of marine univalve shells, 159 species, represented by about 500 specimens, for each school. The specimens were fine, and such a series, if purchased of a dealer, would have cost about $150 at a conservative estimate; that is, for the 25 schools, the specimens alone of this first instalment had a money value of $3,750. Each species had a printed label, and there were 36 large explanatory labels corresponding to the orders and families. The specimens were in neat trays; each label was glued to a sloping block slipping into the tray, so that the whole was ready for exhibition. A printed pamphlet gave directions for arrangement.

Schools accepting a collection agreed to pay for transportation and to provide proper cabinets or cases; the Museum defrayed the cost of trays, labels, etc., for the first instalment of specimens, but the schools agreed to pay, at cost price, for such outside material required in future. As long as these conditions are fulfilled the collection is the property of the school, but subject to the general supervision and control of the Museum, and it cannot be sold or given away without the consent of the Museum Director. If conditions are violated by the school the collection may be reclaimed.

It should be remembered that marine gastropods—the only group included in the first instalment—are only a part of the mollusca; there remain the bivalves, all the land and fresh water shells and the cephalopods, and we propose to give special

and fuller sets of the Alabama species. But conchology is only one branch; we expect to include insects, crustacea, corals, echinoderms, at least some birds and other vertebrates, and probably plants. Geology will have a prominent place; there will be specimens of rocks, ores, minerals, fossils, etc.; probably the second instalment will consist of Alabama fossils. In fact, we are planning for 25 branch museums, to be built up gradually in widely separated parts of Alabama.

The schools have been chosen with care, for their importance and also to distribute the collections as evenly as possible. Private and denominational institutions were excluded, though several are of great merit; we felt that our duty lay to the public ones. The normal schools are to receive special sets later on. From first to last there has been no hint of favoritism; we have simply tried to place the coilections where they would do the most good.

The reception of our gifts was gratifying. Teachers were enthusiastic in their praise; local newspapers were quick to see the advantages accruing to their towns and schools, and they gave a good deal of space to the plan, already widely heralded by the more important city journals. Of course there were exceptions; some schools were indifferent; some declined the gift; two or three did not even take the trouble to send an answer to our offer; one principal wrote that it would be unjust to make his school pay for a cabinet. Every new scheme must expect such rebuffs, but we had very few; approval was clear, and there was an immediate awakening of interest all over the state. This was shown by numerous letters, including not a few from schools which begged for a share in the distribution. Latterly these requests have become so numerous that we have decided to issue additional sets as soon as possible.

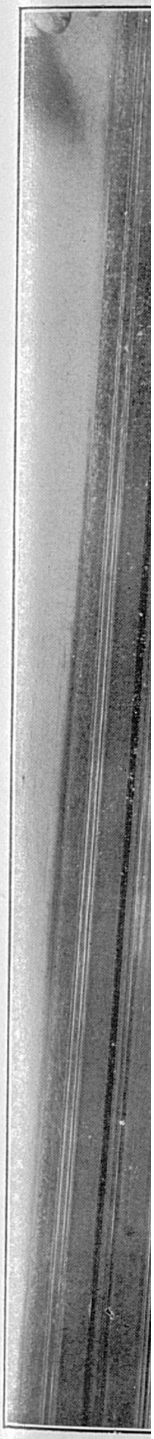
The next step was to make these gifts permanently useful. A school collection may serve to illustrate lectures and lessons, but it will not arouse enthusiasm until the pupils themselves are interested in building it up. At our suggestion, most of the schools have pupil custodians, chosen by vote. The custodian has charge of the collection and is expected to add to it by specimens which he or his comrades may find; he corresponds with the Curator of this Museum, who tries, by every

means, to promote taste for nature study. Of course the influence cannot be felt in a day, nor is the plan always successful; but the results in many cases have been more than encouraging. Some of these custodians are already enthusiastic amateur naturalists and their comrades catch the spirit from them; in several schools the pupils are adding almost daily to their museum and have an evident pride in it.

These school museums are seen by many parents and other outsiders; but the larger cities should have public museums, where the exhibition rooms will be really educative. We are already planning branches for Montgomery, Birmingham and Mobile. In the latter city we are working in conjunction with the Charles Mohr Society, a thriving and enthusiastic circle of naturalists; collections have been formed and arranged, and the Society is building up a working library. At present the specimens are in very modest quarters and have only been shown on a few occasions; negotiations are in progress for their transfer to a public institution, and it is probable that Mobile will soon have a good public museum.

Meanwhile, we are not forgetting the undercurrent—personal aid and influence. Ours is missionary work and we must make our opportunities, helping not only those who come to us, but seeking them out, cultivating every promising field. At the University, students are invited to our laboratories and encouraged to do practical work in the field. Arrangements have been made to meet some of the custodians in a camping and collecting trip. More than one amateur traces his interest to us. It is clear that the awakening has come for Alabama; the increase of interest is manifest and growing all over the state. Nature study is here and it is here to stay.

Large museums count their income in five or six figures; even small towns are spending generous sums, because they are convinced of the value of museum work. Until now the resources of the Survey Museum—which is really the State Museum of Natural Science—have been absurdly inadequate for the task. It is the simple truth that our plans are more far-reaching than those of any similar institution, and they have met with marked success. To make them complete we should have some improvements in the museum itself, and closer and



Group Case of Marsh Birds in the Milwaukee Public Museum. By courtesy of the Museum

Group Case of Marsh Birds in the Milwaukee Public Museum. By courtesy of the Museum

more effective relations with the schools. For example, we should be able to give school lectures with stereopticon illustrations, and there should be regular field excursions under our supervision; but at present we cannot carry out the plans because we have no funds.

It would be unjust and, indeed, illegal to burden the Geological Survey with the expenses of such outside work. It would be equally unjust to throw the burden on the University; it needs all its resources, and more, for other things. It seems clear to me that the Museum should have an endowment of its own. Until this can be secured it should receive a sufficient special appropriation from the state, as other state museums do. I am not claiming that museums are the most important of public institutions, but I do hold, and think I have proved, that they are one of the strongest influences for good; that they educate the people and make for a higher civilization. Our own Museum, perhaps, is doing more than its share; certainly it deserves support and encouragement.