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THE EDUCATIONAL ASPECT OF THE UNITED STATES NATIONAL MUSEUM.

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READ BEFORE THE HISTORICAL SEMINARY OF THE JOHNS HOPKINS UNIVERSITY.

It gives me great pleasure to speak to you this evening on University instruction in the National Museum, especially that portion of it which relates to mankind. I might have called my subject, the natural history of ideas,—as illustrated in the arrangement of the Anthropological Department of the Smithsonian Institution. In every well ordered museum there are two museums, and there are two radically different opinions among the men in charge as to which of these two should rule over the other.

If you were to accompany me to the fourth story of the north tower, Smithsonian building, I would show you a distinguished conchologist, in a most attractive suite of chambers, furnished with cherry cabinets securely locked to defend against thieves and careless fingers the "study series" of museum shells. Only now and then does a citizen of the outside world set eyes upon these gorgeous treasures. They are for the curator and his brother conchologists. On the ground floor of the same building arranged in glazed cases you may see any day in common with all who have the necessary curiosity the "exhibition series" of shells. Now shall the fourth story be administered for the sake of the ground floor?

Perhaps you are not fond of shells, but take the birds into your fancy. Well, the lesson is the same. Along that balcony behind the wire screen are thousands upon thousands of bird skins which the public never see. That is the "study series." While here below perched upon neat stands, as near the mimicry of life as taxidermist's skill can come, peep through the glass doors miles of the feathered tribes. These are the "exhibition

series." And the question comes again which is servant to the other? To pass from curator to curator is but to repeat the enigma. Whether it be marine invertebrates, insects, fishes, reptiles or mammals, there are ten times more of precious specimens carefully locked in the drawers than are exposed to public gaze. All museums resemble each other in this regard.

You will occasionally hear one of the favored gentlemen say: "If I had my way there should be no 'exhibition series.' The public have no business to see these things. Every moment I spend in mounting specimens for the public to gaze at is lost from my work, and every dollar appropriated to costly mounting and plate glass is just so much diverted from procuring new and fresh material for me." I heard this very argument used by a distinguished keeper of one of the best museums of Europe.

On the other hand men equally as learned say: "What is the use of writing books for nobody to read? If you stir up a love for these things in the public, will they not fill your mill with grist, build your cases for your study series and give you money to perfect your work?" And so the battle has been fought for you while you were being born and nourished, and the public are now freely invited to share the joy of the naturalist.

In the field of natural history the students of Johns Hopkins University do not need to be told by me that human ingenuity has exhausted itself to devise ways of showing to the eye the processes of nature by means of pictures, microphotographs, dried and alcoholic specimens, casts, and models in wax, paper or plaster. The ontogeny of many species, the classification, the variations, the result of all the forces which combined constitute environment, comparative anatomy and evolution of form, are beautifully set up in our great collections, attractive as works of art and admired by all lovers of nature.

Now all this has been the growth of years. I shall not dwell upon it. Indeed I only mention the subject to introduce what I may have to say to you upon the National Museum in its relation to natural history of man and the connection of this method of study with the pursuit of human history.

To my thinking, anthropology is the application of all the methods of natural history to the study of man, of his anatomy,

his physiology, his measurements and external characters, his psycho-physical activities. But I extend my definition even to his inventions, in the arts of living, in social life, in language and opinions, giving to the word invention its widest possible application to everything that man has found out how to do since his first appearance on this planet. By this rule I would call not only useful and decorative arts inventions, but language, literatures, social fabrics, laws, customs, fashions, even creeds and cults as formulated in words or set up in modes of worship are inventions. Observe carefully that I extend my measuring, counting and dissecting even to man's inventions in the arts of living, in social life, in speech and in opinions. Only, in this case you can actually see the basket being made, the flax being spun, the vase being moulded, the iron implement being forged, and you may also see the weaver, the spinner, the potter and the smith in action. But practically to the curator and to the student of archaeology, especially, the facile hand has been removed and he can only in imagination conceive the creative purpose in the handiwork. This brings him strikingly near the naturalist in the last appeal, whether he takes theistic or non-theistic views of creation.

Inventions may also be studied in their structure and their functions, their genera and species, their evolution and their philogeny, their relation to environment, their combined share in great historic movements akin to the prevalence or scarcity of great masses of plants or animals. The clothes we wear, the houses we inhabit, the tools of our daily toil, the arts we cultivate, the words we utter, the customs we practice, our social fabric, our beliefs and conduct in presence of the spirit world, all of these may be treated as so many plants or insects, birds or mammals. In our historic, ethnic or technic studies we need omit no process in vogue among keepers of such specimens and we may follow them implicitly in every method they employ.

It is only within the memory of many now living that the methods and apparatus of the natural historian have been applied successfully to human affairs. Indeed you would be astonished in visiting some of the grandest ethnological museums of Europe to find that not one progressive step had been taken in fifty years. In them, locality, blood, nationality and language are confounded

and made the one category of arrangement. All else is the work of the upholsterer.

The use of the inventive faculty, the art of inventing, has been no exception to this rule of similarity with the organic world. The first inventors had few instrumentalities, few processes between them and the finished result, the great professional inventors like Edison and Graham Bell call into action a most complicated set of agencies and methods that can be likened only to such highly organized beings as man himself. Between the first "happy thought" and the latest protected invention there is a long series of inventive processes related and developed into higher and higher forms. The first invention may possibly have been a literal translation of the Latin *invenio*. The man found something that suited him better than the common run of objects in the same class. The series seems to have run somewhat thus.

1. Accidental discovery. Mere observation and apperception.
2. Happy thought. Utilization of natural forces.
3. Design. The patterns in weaving, etc.
4. Experiment. Trying between two or more ways and means.
5. Natural reward stimulus. Better luck, greater strength.
6. Social and civil rewards. Headman, chieftaincies, Olympian games, and the like.
7. Patents and monopolies.
8. Co-operative invention.

But I would not mislead you into thinking that our National Museum was the first to use the method of the naturalist in the study of inventions. I cannot even tell you the exact time and place of its origin, but your speaker caught the contagion, many years ago, from Dr. Gustav Klemm, of Dresden, who went all over the world collecting things to show how this splendid animal, called man, had invented his own successes. The king of Saxony did not appreciate this wonderful seer and his great collection. The city of Leipsic bought the material on the death of Dr. Klemm and you may now see it in the shabbiest of buildings on the Johannis-Platz.

A far richer cabinet and one that met a better fate is that of Col. Lane-Fox, now Gen. Pitt-Rivers, to be seen in the rear of the Natural History Museum at Oxford.

The great world expositions and the special lines of taste and research followed by men of learning and fortune have enriched almost every great city of Europe with collections arranged to show the elaboration of one or more industries. But you will allow me to throw one other flower upon the grave of Gustav Klemm, inasmuch as I pluck it from the conservatory of your historical Seminary. He was one of the very first men to recognize the mutual dependence of the historian and the ethnographer. He knew well that it is very rash for us museum people to adopt conclusions that contradict the testimony; and he also knew that interpretations could not be given to writings which are absurd in the light of things. Perhaps he would say to you at your work. Go over to Washington and hear all those anthropologists have to say, but do not altogether lose your heads and your reverence for historical records, for true methods of historic study are among the highest of all inventions.

In the study of the natural history of invention there occurs something very like the degrees of complexity in organic beings. For your unicellular organisms, which have no differentiation of structure for the performance of a variety of functions there is the non-organic tool, the stone knife, hammer, perforator, &c.

Analogous to the highly organized plants or animals, running through a series of increasing complexity, the museum of invention has its poly-organic units of technology, such are a suit of clothing, a set of tools or weapons, the house and its furniture, the shops of the artisans, the paraphernalia of a ceremony or worship.

And to perfect the comparison, the material, the pictures and descriptions to set forth the life history of a whole tribe or nation resemble very closely those studies of the best naturalists who include within the examination of a species a full description of its habits *en masse*. Such are Dr. Cook's and Sir John Lubbock's studies in ants, and such also are the ethnographic monographs sought in the little question book sent out by the British Association called "Notes and queries on Anthropological subjects."

The Smithsonian Institution itself is one of the best examples of an invention occurring to me, which actually in its life history has typed the whole series of creation very much in the same way that the embryo touches in passing every type of life below it.

On the 27th June, 1829, died at Genoa, Italy, James Smithson, natural son of the first Duke of Northumberland. Nearly three

years before his death he made a will in which, after a few small bequests, he gave to his nephew, Henry James Hungerford, the entire income arising from his property. Should the said Hungerford have a child, legitimate or illegitimate, Smithson left to such child, his heirs, executors and assigns, his estate. In case of Hungerford's dying without children he says: "I then bequeath the whole of my property to the United States of America, to found at Washington under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men."

This was the first vital process, the period of fructification in the ovary.

Whether in obedience to a decree of Providence or for the purpose of carrying out his uncle's wishes or because of his own inclinations, Henry James Hungerford, *alias* Henry James Dickinson, *alias* Baron Eunice de la Batut, "led a roving life in Europe and died in Pisa, June 5th, 1835, having never married and leaving no heirs who could make a claim to his bounty."

This was the second period in the metamorphosis.

On the 28th of July, 1835, Hon. Aaron Vail sent a message to the Hon. John Forsyth, Secretary of State, that the United States was entitled to the estate of Smithson, valued at one hundred thousand pounds. The Secretary told President Jackson, the President told the Senate, and his message was subsequently referred to the House. The discussion about receiving the money at all was spirited, but all shoals and reefs passed, the bill to institute a suit in Chancery to recover the money became a law, July 1, 1836.

Thus was the third period of the metamorphosis passed.

Most fortunately for the whole world the Hon. Richard Rush was appointed agent to assert and prosecute the claim. The suit was commenced in November and brought to a close in May, 1838, less than two years. When we remember that this was in a country where a "Chancery suit was a thing that might begin with a man's life and its termination be his epitaph" our admiration for Mr. Rush and the English Court needs no stimulus. In order to save the cost of exchange the agent had the fund converted into gold and silver and sent to America in the ship "Mediator."

This was the fourth period of the metamorphosis.

On December 6th, 1838, President Van Buren announced to Congress the arrival of the fund. Time will not allow me to tell of the various fortunes and misfortunes of this fund and the wranglings over it in Congress, amounting even to advice to send it back. Eight years elapsed before they came to any conclusions, and on August 10th, 1846, President Polk signed a bill organizing the Smithsonian Institution and creating a board of Regents.

Thus the fifth period of the metamorphosis.

The rest of the story can be told in a few words.

When we consider how many feeble institutions of our country that started into life with a capital of a half million are now kept from the grave by periodical stimulants, we are in a frame of mind to appreciate the magnitude of Professor Henry's appointment as the first Secretary of this trust. It was his genius that made the Smithsonian the first scientific Institution of the world. Had the regents failed here it would have been as well if Smithson had never been born.

The mission of Henry was to give genius to the enterprise, but it is well known that the diffusion of knowledge was the one dominant thought with him. Professor Henry had no notion of a Museum or of vast collections. That was a later growth. If we owe the money to Smithson, the *genius loci* to Henry, we owe the museum to Professor Baird. He was the omnivorous collector, the naturalist, the Peabody of specimens, the David of all future temple builders.

At the risk of having my motives misinterpreted by reference to the living, I should fail to do my whole duty if I did not add to the names already mentioned that of Professor G. Brown Goode, to whose genius we owe the purely educational element of our Museum, and that of Professor Langley whose studies in the New Astronomy give promise of that cheer which our Institution will in the future bestow on those who are laboring out on the very boundaries of natural knowledge.

The interpretation of Smithson's bequest, elaborated by the four men whose names I have mentioned, Henry, Baird, Goode and Langley, makes our Institution a great world university in the highest sense of the word *universitas*. The increase and diffusion of knowledge to all men so far as in us lies, the increase of knowl-

edge by the explorations of the heavens, the earth and the waters for new knowledge of all and every kind; and the diffusion of knowledge by communicating to all the researches of all, which last is only another name for increase by diffusion. The Smithsonian Institution has come to be a world university for the increase of knowledge, first, by research, second, by publication, third, by the international exchange, which I may be permitted to explain at a little more length.

For the increase of knowledge among men the Smithsonian Institution has international exchange, its publications, its library, its bureau of Ethnology and other explorations, and its museum.

By the International exchange it is the aim of our Institution to put its publications and those of the Government into every great library in the world, to place its monographs into the hands of every specialist in the world, to afford a central office through which every explorer of knowledge may speak to every other explorer of knowledge, without money and without price. By assuming this unique rôle the Smithsonian has escaped all the jealousies which would have fallen on it, had the Regents decided to enter into rivalry with universities, observatories and other established institutions, as was proposed by nearly every one to whom President Polk referred.

The exchange extends also to specimens and thus original workers may cooperate and material may be placed in the hands of those best fitted to examine it.

The publications of our Institution embrace:

I. CONTRIBUTIONS TO KNOWLEDGE, learned monographs printed in quarto form. These are chiefly philosophical memoirs rather than reports of technical work.

II. SMITHSONIAN REPORTS. These contain a succinct account of the establishment for each year, with an appendix made up of scientific papers, not necessarily based on museum specimens. In recent years Part Second of this report covers the work of the National museum.

III. MISCELLANEOUS COLLECTIONS. These are specially technical, such as check-lists, taxonomic reports, bibliographies, tables, in the nature of hand-books for experts.

IV. PROCEEDINGS OF THE NATIONAL MUSEUM. This is our readiest medium of publication and is much like the journal of

learned societies, containing short descriptions of species, accounts of new collections and such matter as secures priority to the author and readiest knowledge to those interested.

V. BULLETINS OF THE NATIONAL MUSEUM. These resemble very closely the series of historical papers issued by your own department of the University. Long or short, they represent concisely what the author has to say on that special theme. All of these publications and more, are sought to be deposited with institutions and men who want them. Without boasting, it may be said that the Smithsonian has to its utmost ability carried out this purpose. And you will readily see that such broadcast dissemination of scientific literature brings back from every land, from every society and from many individuals a generous response in three directions, the gift of books, the gift of pictures and the gift of things.

The Library of our establishment, therefore will consist mainly of the results of barter or exchange of kind. Whatsoever a man soweth, that will he also reap, comes literally true with us, and by every mail and express pour into our lap reports of government aid to science, Proceedings, Transactions, Journals, Reviews, Bulletins, Reports, Monographs, Zeitschriften, Mittheilungen, and what not, from every land and in every tongue. These all find lodgment in the custody of our librarian who portions them out as follows:

1. To the Sectional Libraries. These resemble precisely your Seminary library.

2. To the Library of Current Literature. This is a reading room devoted to serials where they remain until the volumes are completed, open to the public as well as to the Museum staff.

3. To the Museum Working Library. The depository of all books that are likely to be called for any day. It is a working library for the entire Institution.

4. The Smithsonian Deposit in the Congressional Library. By special act of Congress that library is the curator of our literature not immediately needed in our work.

If you will allow your imagination a little play you will see extending from the brown stone building in the mall at Washington tracks to all the centres of thought and knowledge, with tiny cars flying to and fro carrying and bringing leaves, pam-

phlets and great volumes to increase and diffuse knowledge. In reality there is once in a while friction, miscarriage, break-down, but all that is due to human weakness not the plan. If the interpretation of Mr. Smithson's bequest made by the distinguished men living and dead whom I have named could be realized, the golden rule would be in vogue among the fraternity of science and each man would be made sharer in the happiness of all.

For the accumulation of knowledge we need to explore new territory. In many departments of research we have laborers in the field. Of those I cannot speak familiarly. But in our own department of human history, I am happy to say that we have our Bureau of Ethnology, under the management of Major Powell, containing such specialists as Mallery, Henshaw, Thomas, Holmes, Dorsey and Gatschet. This Bureau has its own admirable series of Contributions, Reports, Monographs and Bulletins.

After all, the most apparent result of our system is the National Museum under the management of the Smithsonian Institution.

The Assistant Secretary of the Smithsonian Institution is the Director of the National Museum. Under his charge with more or less perfection of organization are twenty departments, all receiving their material through a single office of registration, all operating through the same central office of exchange, all reporting to the same director and all publishing the results of their work in the same series. It was perfectly justifiable therefore for Professor Langley to say to a distinguished visitor who asked "Do you know where to find each one of the three millions of objects under your charge?" "No, but I know where the man is who can put his hand on each specimen in some minutes."¹

To be completely in accord with the naturalists the technographer has need to work in three directions, he must be a collector, an artist, and an author. A perfect museum of Ethnology

¹ All of the "exhibition series" in the National Museum are set up in cases which in a few moments can be rolled into the lecture room. During six months of the year public free lectures are there delivered, notable among which is the "Saturday Course," conducted by a joint commission of the scientific societies of Washington.

therefore embraces its cabinets, its portfolios, and its archives, and the curator himself must attend equally to his collecting, his picture-making, and his manuscripts.

THE STUDENT	COLLECTS	IN HIS	FOR THE GENERAL	IN THE FORM OF
I.	II.	III.	IV.	V.
Collector	Things	Cabinet	Museum	Things at rest;
Artist	Pictures	Portfolio	Gallery	Pictures and Models of things in action;
Author	Literature	Archives	Library	Description, Classification, Comparison.

Nor is it enough to collect specimens, make pictures of their parts and of their aggregations, and write an accurate description of them. A museum is composed of a vast number of things which are not only related to the men who used them and to the things in whose company they were used at home, but they are now to be correlated with other things from every quarter of the globe. The first thought that engages a curator's mind when a new thing has been properly catalogued and cared for is, where to put it. The answer to this question depends upon the classific concepts which he has previously formulated in his mind and the order in which these concepts have precedence. The major concepts governing the anthropological museums of the world are Race, Nationality, Location, Materials, Elaboration and Function. Indeed, so hopelessly are the first three confounded, that we can reduce the ruling concepts to four, Place, Material, Evolution and Function. The British Museum, the Trocadero, Stockholm, Copenhagen, Berlin, Dresden, and in our own country, the Peabody, adopt the locative concept as uppermost; while Oxford, South Kensington, Guimet, Cluny, Leipsic, and the National Museum favor the other concepts for the dominant ones. It is not to be understood that any one of these discards the ruling concept of the other, it is merely subordinated and this subordination establishes at once the tone, the genius, the total aspect of the place.

It is not necessary to enter into a discussion here of the comparative merits of administrative plans. They are all good, each bringing out phases of truth overlooked in others and it is only by a comparison of results that the whole truth may be reached.

In order to make myself perfectly clear let me take a familiar example. Suppose there comes to the Museum a harpoon, what may be done with it?

1. One curator would ask from what part of the world does it come? He desires to collate the specimen with regional questions. His concept is chorography, and when he has made his series complete he will give you a lecture on environment, showing how the suggestion of nature, like that of the hypnotist, has guided the thought of the inventor and made it impossible for him to move except in certain directions.

2. Another curator will place the same example in a series according to the elaboration of its structure. The laws of invention like the laws of evolution work from the simple to the more complex.

Mr. Tylor tells us that it is almost inconceivable for a people to abandon a useful invention unless its necessity has ceased. It is quite safe for your class in history to utilize this rule even in the study of institutions. A museum arranged wholly on this plan would resemble the one in Oxford founded by General Pitt-Rivers.

3. A third curator would take the harpoon to an alcove wherein he had determined to deposit all his possessions from a given people. His purpose is to show you how each breed of men dresses, houses, exerts, organizes itself. A perfect installation in this line would be the history of a people written in things. This is called the ethnographic method, and is most successfully carried out in Cambridge, Mass., the British Museum, Copenhagen, Dresden, and Berlin.

4. A fourth curator would say, I do not care so much about the race which used this object. My concern is with the nation whose interests it served. There are in many European capitals elegant museums organized to show the progress of art during various reigns and dynasties. The Kunstgewerbe Museum, in Berlin, adjoining the Royal Ethnographic, rivals it also in the richness of its material. There is in Copenhagen a National Gallery in the old palace of Rosenberg, through which you may walk and spend a brief time with each sovereign of the Kingdom.

5. Our wandering specimen may fall into the hands of a technologist, who will say at once whether or not the piece is in his

line. The student of naval architecture would give the harpoon away, while the Fish Commission curators would embrace it with heart-felt affection.

6. We must not forget the curator whose primal concept is substance or material. The Royal Museum of Ireland and the India Museum of London are splendid specimens of vast masses thus displayed, but you will recall at once the costly cabinets of jade, of ivory, of ceramic art brought together solely to show how a definite substance has become tangled in the meshes of human history.

7. Indeed there are those who would not give a fig for the specimen if they could not get at the native name therefor. For by means of this shadowy museum of names they hope to and they do trace races, peoples over the face of the earth and establish their relationship.

Recall if you please what was said about the structure of the National Museum. It is not one but many. The division of Anthropology has its Department of Prehistoric Anthropology which you will visit with Mr. Wilson to-morrow; the section of Oriental Antiquities, and of the Historical Association; its Department of Ethnology, in which the question is one of race preëminently, and its technographic, or Arts and Industries Department, in which specimens of all the problems enumerated are wrought out so far as the material will permit.

In the musical series it will be easy to show how time or rhythm and not tune is the starting point of music. It will be easy to show how from vibratory mass, a vibrating string, a vibrating column of air, a vibrating shell, four series of melody and harmony have been elaborated.

It will be possible to see the most primitive of all devices for gathering the harvest of the waters and to follow the lines of invention up to the latest scientific appliances for deep sea dredging.

You may study at your leisure the bark-boats, the hide-boat, the raft, the dug-out as the first lesson in navigation given by Dame Nature respectively to peoples living in birch tree regions, buffalo regions, surf-beaten shores, or in the land of the knife-inviting cedar.

From this rude primary school you may see how man has worked out the hull of the *Majestic*, how from a grass mat to catch the wind or a rude paddle, have come the four-masted schooner and the double screw.

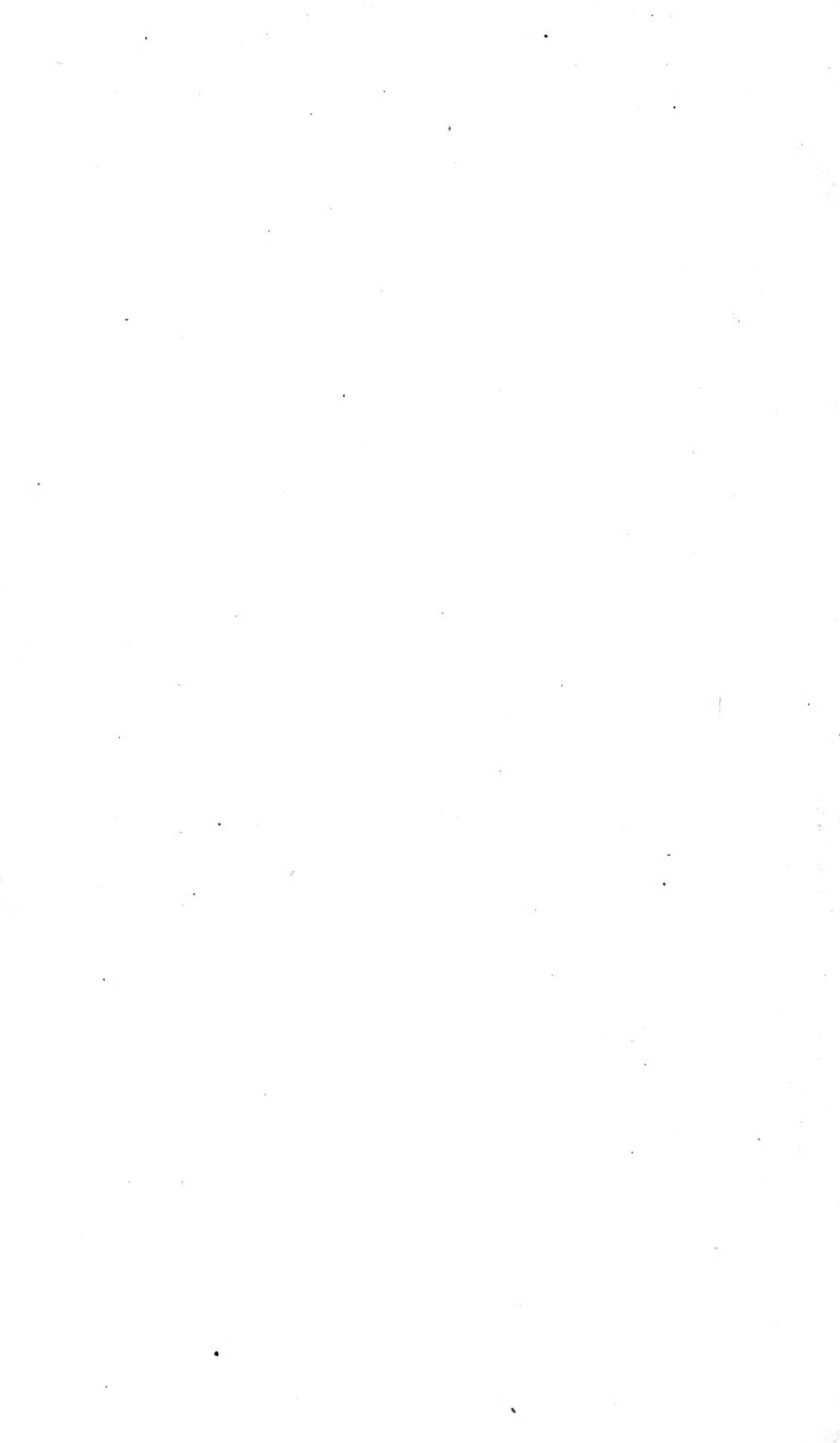
Only a step or two will bring you face to face with the problem of the Pullman palace train. There she stands at the other end of the series, a savage woman with a burden on her back or head, mother of Atlas and the Caryatides, pointing through the ages at beasts of burden, wagon trains and the locomotive as her offspring.

Perhaps you are an admirer of the Promethean myth or a disciple of the simple-hearted Diogenes. Follow with your eye along this series beginning with two dried sticks and ending with an electric button; beginning with a hole in the ground as in Samoa and ending with the modern cooking range of the University club; beginning with the fire-fly lamp, by the light of which, all night long, in the Dismal Swamp, an imaginary loved one in white paddles her light canoe, and ending with the incandescent burner over head.

The path along which it is possible to track the inventive genius of man into broader and smoother avenues of culture are numberless. Only a few have been wrought out in our Museums. You are doing a wonderful work in the same direction by tracing the primitive societies to their sources, for you will not find one source for all social structures any more than one source for naval architecture in the bark-boat, the skin-boat, the raft and the dug-out. Their common cause is the desire and the intention of the inventor to get across the river and the common cause of all social structures is in that unsatisfied being called man, whose superabundant brain will lead him from utter ignorance and helplessness to the possession and understanding of the earth. As fast as these processes have been unfolded our museum has endeavored to give them visible expression. Indeed we have a few choice series in which we have sealed an author's book, his pictures and his type specimens in a single cabinet that the written page may stand by the side of its material witnesses. A few of us who have loved to participate in this formative period of new historic study, with tender solicitude and great faith, will soon hand our slate and book of problems to our young successors.

The golden harvests which you will surely reap make us wish to renew our youth and thrust in the sickle. Take it from our hand, however, or rather invent a better one and go forth with our benediction. The page of history is not square but triangular. Its base is over the present, its apex a few milleniums in the past. It covered at no time all mankind, and it can scarcely be said to do so now. Outside of the area overspread by this written page lies the most territory, inhabited by unhistoric peoples. They have written not one word concerning their own affairs, and about many of them, so far remote in time or place are they, not one word has been written. These are the prehistoric and the extrahistoric races and tribes, whose lips of stone are to speak to you the story of our race.





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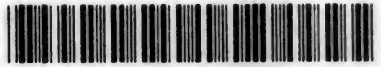
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