### CLASSIFICATION AND ARRANGEMENT OF THE EXHIBITS OF AN ANTHROPOLOGICAL MUSEUM.*

*Scope of the Anthropological Field.*—The history of man, including all that he is and does and all that he has been and has done, is a wide and important subject, and is fortunately susceptible, in large part, of lucid and effective treatment in the museum. The available materials are of two principal classes; the first relates to man himself as a biological unit, and the second to the works of his hands, the creations of his developing mind. These two divisions of the subject are readily separated and require independent treatment in the museum. The first division is known as *Physical Anthropology,* often called Somatology; the second may in contradistinction be called *Culture Anthropology,* since it embodies the vast range of the essentially human activities.

*The Somatic Division.*—If we discuss man independently of his arts—his artificial activities—we treat of him from the standpoint of the naturalist or biologist. Physical anthropology includes the study of man as a species of animal, of his races and varieties, his external characters, his anatomy, physiology and pathology. It includes his ontogeny—the development of the individual—his inception and embryonic evolution, his advances to maturity, his descent to the grave and return to the elements whence he arose. It includes his phylogeny—the development of the species from lower forms of life; the evolution of every part of his frame—the skin, bones, muscles, circulatory system, nervous system and other special organs; and the relation of these parts one and all to corresponding parts of the lower animals. This is a magnificent field for illustration and, in capable hands, may readily fill a museum with exhibits of superlative interest and value. It is true that man is properly treated along with the lower orders of creatures as one of a great system of biological units, and he should therefore be included in all general biological presentations in museums. But anthropology requires more than this systematic biological treatment. Man's physical evolution and anatomical structure correlate directly with all his activities; race and culture are intimately connected. The naturalist could more consistently separate, in his museum presentation, the bird from her nest or the bee from its comb, than could the anthropologist divorce human handiwork from the man. There is excellent reason, therefore, for making an especial study and exhibition of physical man in immediate association with culture exhibits. It is necessary to bring together everything that relates to the great human unit. The anthropological museum should present physical man in the most complete and exhaustive manner. However, it is not the purpose at present to take up this branch in detail, but rather to give almost exclusive attention to the phenomena of culture.

*The Culture Division.*—If the physical phenomena of man include all that connects him *with* the brute, his culture phenomena include all that distinguishes him *from* the brute. If we wish to realize more fully the scope of the latter division of the subject, which includes the objective evidences of culture, we have only, in imagination, to sweep away all the multitude of things that it has brought into the world; destroy every city, town and dwelling; every article of furniture, picture, sculpture, book, textile fabric, fictile product; every article of clothing and ornament; every vehicle, machine, utensil and implement—and, in fact, every trace of human handiwork; set aside the use of fire and cooked food; ban-

* The scheme elaborated in this paper is now being carried out in the United States National Museum as rapidly as conditions will permit.

ish all language, social organization, government, religion, music, literature and intellectual life generally. When this has been done we may behold the real man standing in his original nakedness among his fellows of the brute world.

*Limitations of Culture Material.*—The material evidences of culture are thus seen to be of vast extent and importance; but it should be observed, notwithstanding this fact, that all of culture can not be illustrated in the museum, for we can utilize material things only. We cannot show by its collections the social, moral, religious and intellectual traits of man save in an indirect way. We can do little to illustrate language save by displaying the methods of its expression to the eye in pictures and letters. We can tell little of religion save by assembling the idols and devices that represent its symbolism, and the paraphernalia which pertains to the practice of its rites. We can tell nothing of music save by a display of the curious array of instruments used in producing sound, and society and government are even less within the sphere of the museum. Yet it is wonderful how much of the immaterial side of the race can be illustrated by the material things that man has used and made; for the mind is *in* the things and was developed *with* and *by* the things more than is commonly understood.

*Classification of Culture Materials.*—But what shall we attempt to show in the culture division of our anthropological museum, and how shall we classify and place our collections? Classification is the first essential. Taking a view of the world and its inhabitants from a sufficiently distant point of view, a few of the greater groups of facts attract the eye. *First,* we observe that men are of several distinct races and varieties; but a closer look demonstrates that these are not separated one from another, but are intermingled in such ways as to afford no basis save the most general for a grouping of their culture products. *Second,* we observe that nearly all peoples are separated into social and political groups—into clans, tribes and nations—occupying distinct areas of the habitable globe; looking closer at these, one sees that they are not all alike, that the widest possible differences in condition and culture status exist. Some of the groups are savages almost without art and without any evidences of higher culture; some are more advanced, occupying the barbarian grade; while still others are highly cultured and surrounded by a thousand evidences of enlightenment and luxury. Shall we then classify and display our museum exhibits on the basis of this grouping of the peoples into tribes and nations? Let us see what would be the result. The British Empire is a nation of commanding power and boundless territory, but its culture materials would comprise every variety of product under the sun, from the lowest to the highest, and from every known region of the globe. The same is true of nearly all of the civilized nations. It is evident, therefore, that units of this class are too large and too complex to be of use in classification. Besides, civilized nations may well be expected each to have and maintain its own national museum as an independent institution or as a department of its general museum.

Let us take another illustration. Suppose that we decide to arrange our collections by the inferior social or political units —as by states or tribes. Investigation shows that these units are too small, that we should have thousands of exhibition units —too many entirely for practical purposes of grouping and installation. Besides, some are artificial divisions and some are natural divisions, and the classification would be mixed and wholly unsatisfactory. What is

wanted is a simple natural grouping of the very diversified ethnic phenomena.

Glancing a *third* time over the field and noting especially the culture of the various groups of people, we find that it varies with the region rather than with the race or nation, and that there is a significant relation between it and environment. What uncivilized men do and have done in any region depends much on the climate and natural productions of that region. The arctic provinces have one culture, the tropical another; the arid plains have one group of activities, the humid region another. The inland district has a race of hunters and develops hunting arts, the maritime people becomes a race of fishers and develops fisher's arts, and so on. Culture is thus so much the outgrowth of the region that its products may be assembled by geographical areas, and these may be large or small as occasion demands. The continents, great islands and groups of islands are subdivided into minor areas. These are called by anthropologists specialization areas, because they have given special characters to the culture developed within them. They have nothing to do with political lines and they disregard modern civilization, because it has broken over all natural limits, and by means of railroads and ships carries its generalized culture to the ends of the earth. But as these areas are largely those in which specialized cultures have had their inception and early development, it is by them that the student can best study and the curator best illustrate the phenomena of humanity. Within the space assigned to each of these geographic groups in the museum should be assembled specimens of everything ethnical that the area produces, no matter what the race, the nation, the culture stage or the time represented, excepting always the intrusive generalized elements of civilization, which must be treated separately in museums of national history or in museums covering special limited fields, as art museums and industrial museums.

### THE GEO-ETHNIC ARRANGEMENT.

Now the museum materials intended to illustrate a given geographic-ethnic territory should be such in character and so arranged that the student or visitor passing through the hall or halls in which they are installed may gather quickly a clear impression of the people and culture of the area represented. I say first *people* because, after all, it is the people we are studying, and a display of all the culture phenomena of a region without some definite illustration of the people concerned would be wholly unsatisfactory. The man himself as he appears in his every-day life is the best illustration of his own place in history, for his physical aspect, the expression of his face, the care of his person, his clothes, his occupations, his general appearance and social relations, tell the story with much clearness.

So, since we cannot display the people themselves, we should begin each of our ethnical exhibits by building a lay-figure group showing a typical family of the area illustrated—the men, the women and the children—engaged in ordinary occupations and surrounded by the things they make, and use and love. Physical characters should be portrayed with all possible accuracy and a correct impression of the disposition and social attitude of the members of the group should be given. Then around this family group should be arranged in separate cases series of objects illustrating their arts, industries and history.

Following the family group, the next most important culture unit is the dwelling group, which may be modeled in miniature (say one twelfth or one twenty-fourth actual size), and illustrate their houses and constructions of all kinds as well as some-

thing of the home arts and life. Miniature figures of men, women and children may be introduced into the dwelling group to graphically illustrate the practice of culinary arts, manufacture of basketry, weaving, pottery, the use of domestic animals, etc.

Illustrations of other activities should follow the dwelling group in the order of their importance or significance, each exhibit (consisting of the actual objects or of models) being of sufficient extent to serve as a synopsis of the work of the area represented. The method of arranging these series is discussed in detail further on. Along with these exhibits should be taken up the archeology of the area, the prehistoric cultural relics and remains, carrying the story back to the earliest times. The exhibit of each area should be supplemented by maps, pictures and labels, thus completing an attractive synopsis of its culture phenomena. If a particular area should happen to contain two or more distinct peoples or cultures, additional exhibits could be added according to space and needs, rounding out the presentation. If several tribes are included and require separate attention, the less typical may be represented by simple costumed figures instead of by family groups.

It would prove instructive to add to each of these ethnic exhibits illustrations of the physical characteristics of the peoples of the area. These may comprise casts of the face, or even of the entire figure; the skeleton, or parts of it, and especially the skull, which presents wide and significant variations; examples of artificial deformations and mutilations; and collections of such remains of fossil man as are found in the area. This exhibit may also include pictures, diagrams and maps, completing a synopsis of the somatic characters.

The geo-ethnic units, thus described, should be assembled in the museum somewhat as represented in Fig. 1. Here a portion of the ground plan of the exhibition hall is presented. An ordinary, somewhat limited ethnic unit occupies space *I.* of this diagram. The lay figure group stands at *A* and the associated exhibits extend across the hall, filling a single row of cases, and the wall cases of the alcoves. A larger unit is provided for in *II.*, where besides the single family group, *A*, additional lay figures are introduced (*a*, *b*, *c*, *d*) to represent the less conspicuous peoples. In section *III.*, two minor groups are placed, one on the right and the other on the left of the main aisle, with the family lay-figure groups in front (*BB*).

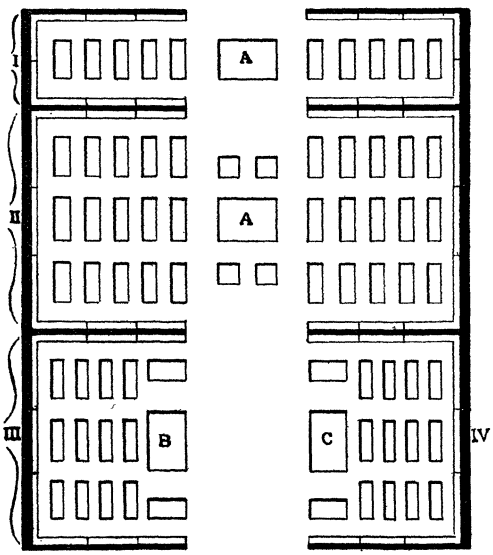


FIG. 1. Assemblage of geo-ethnic units of different sizes.

*I.* A small unit extending the full width of the hall and occupying a single line of cases. *II.* A large unit, also extending across the hall and occupying triple tiers of cases. *III.* A small unit confined to one side of the hall, with two rows of cases. *IV.* Similar to the preceding, with three tiers of cases. The wall cases in each instance are also utilized.

In many instances the lack of well-rounded collections will necessarily prevent the building of family groups, and, if cos-

tumes are at hand, single figures may take their place.

Since these proposed exhibition units are to represent terrestrial areas, it follows that their order in the museum should approximate as nearly as may be the geographical order. If, for example, we are dealing with North America, the most northern group or unit should come first, and the groups to the south follow according to degree of intimacy in geographical relations. In this way neighboring environments, cultures and peoples come together, and their interrelations may be presented and studied to advantage.

Assuming that the museum space to be occupied is an ordinary hall or series of halls having a convenient width of say 120 to 150 feet, the several members of each series would be assembled somewhat as shown in the diagram. The lay-figure cases, *A, A,* would be ranged down the center of the space with wide aisles at right and left, the associated exhibits, *a, b, c, d, e,* coming at the sides in whatever order seems most advantageous, each series extending entirely across the hall, as shown in *I.* and *II.* or otherwise, standing at the sides as indicated in *III.* and *IV.*, where *B* and *C* are the family groups facing the main aisle. The order and relative positions of the separate exhibits in each exhibition unit should be approximately uniform. The ordinary visitor would thus be able to pass down the central aisles, observing the various peoples as represented by the lay-figures, giving slight attention perhaps to the associated exhibits; while the student of a particular branch, as, for example, weapons of war and the chase, could pass from section to section, examining and comparing in geographical order the successive exhibits illustrative of this branch. The thing most to be desired in conducting the visitor through such a great series of exhibits is to bring the various features before him in logical order. The world is presented to him in miniature and the arrangement is such as to teach definite and important lessons.

It frequently happens that a particular ethnic area contains a cultural feature of exceptional importance, which is represented by such a large body of material that to display it in the systematic series would be to throw the whole representation out of symmetry. This exigency would be most happily provided for by arranging the plan and section of the museum building as indicated in Figs. 2 and 3. While the systematic geographical series are provided for in the main sky-lighted hall (*A*), and its lateral gallery spaces (*B*), say 140 feet in total width, lateral tiers of inferior side-lighted halls (*C*), properly connected by doorways with the main hall, may

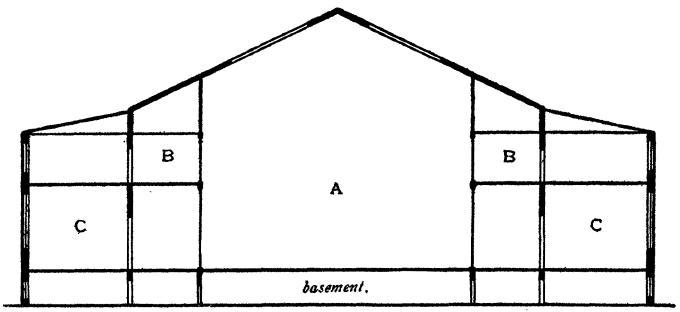


FIG. 2. Section of museum building, showing central sky-lighted hall, *A*, with galleries, *B*, and side-lighted halls, *C*. This grouping of halls seems well adapted to the great body of anthropologic exhibits.

accommodate the overflow of unusually developed features. This idea would apply most satisfactorily, for example, in the California area, where a great series of basketry products, so prominent a feature of the ethnology of that region, could be installed in one of the lateral halls ($C$), the systematic exhibit of the area occupying the full width of $A$. Or again, in the case of the Mississippi Valley area, the great body of archeological material could be placed in one or more of the side halls in suitable relationship with the central exhibits, which would consist of the systematic ethnic collections from that area.

The floor plan of the installation proposed above appears in Fig. 3. The arrangement of halls suggested is probably the best that can be made for general culture exhibits.

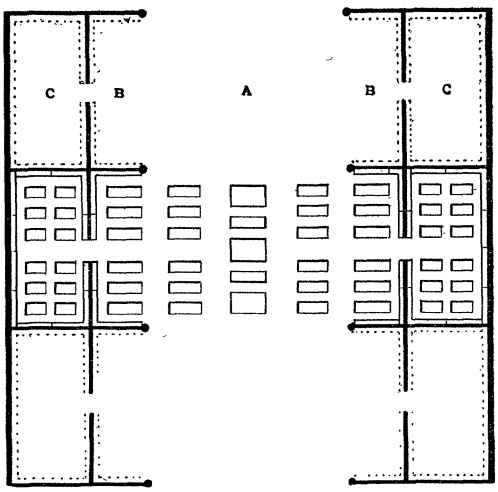


Fig. 3. Floor plan of extensive geo-ethnic unit showing overflow into lateral halls, $C$, $C$. One full-sized family group and two auxiliary lay-figure groups are provided for besides a large number of associated and auxiliary exhibits.

It may be asked whether some other arrangement of geo-ethnic or of other simple ethnic units may not afford superior facilities for examining the whole field of anthropological phenomena. If, for example, exhibits illustrating the various groups of people in the world should be assembled according to grade of culture rather than with respect to geographical order, the lowest group taking first place and the others following according to culture status, would not the survey of the field be easily and advantageously made? Would one not be able through this arrangement, employing the lay-figure groups and the attendant exhibits as before described, to study not only the peoples and compare their culture to good advantage, but to have in orderly view the full range of culture achievement from lowest to highest the world over? This especial concept is illustrated in Fig. 4, in which, instead of the lineal arrangement, a radiate grouping is suggested. The inner concentric space $A$ could be occupied

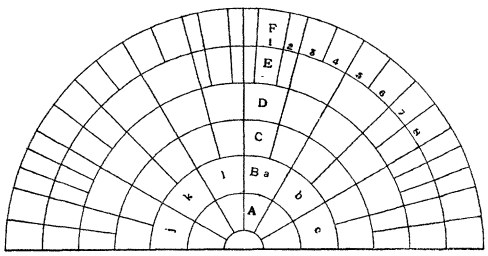


Fig. 4. Concentric arrangement of entire ethnic exhibit.

by the most primitive peoples, the succeeding concentric space $B$ by the next higher peoples, and so on out to the periphery, while the various activities would occupy the radial spaces $A$, $B$, $C$, $D$. These latter would be few in number toward the center where peoples are simple and arts few ($a, b, c, d$), and numerous farther out where peoples are advanced and activities numerous (1, 2, 3, 4). To study a particular people, the visitor would follow the concentric lines ($a, b, c, d$; 1, 2, 3, 4), examining each of the activities of that people in turn. To study a particular grade of culture the world over he would follow the same plan. To study a particular branch

of culture in all its phases, he would pass from center to circumference, noting what each people had done in that branch (*A, B, C, D*). In doing this he would ascend the culture-ladder from the lowest to the highest round, traversing the full range of human accomplishment in the various activities. At the same time, if the exhibits were numerous and properly arranged, he could form a fair idea of what the race as a whole had accomplished, following the development of culture from beginning to end.

This seems at first glance a most complete and comprehensive scheme, for, fully worked out, it would present the peoples of the world, their activities and history, in a single view. But on closer inspection it is found to have numerous shortcomings, apparently unfitting it for general museum use. (1) In applying it, the important factor of the relations of peoples to one another in the world and to their environment must be disregarded; (2) the question of the order of the ethnic units would be difficult to settle, since many peoples are of one grade or nearly the same grade; while some occupy various grades in part; a tribe or nation may be advanced in one direction or activity calling for an outer place on that account, and backward in another, calling for an inner place; (3) such a grouping would be unsatisfactory save where collections are comprehensive and full; besides, (4) a building of unusual design and dimensions would be required; (5) a most serious objection is that this concentric arrangement of a comprehensive exhibit, consisting of thousands of units, would be highly perplexing to any but the trained museum student and wholly beyond the grasp of the ordinary visitor. Ninety out of every hundred persons would utterly fail to comprehend the arrangement. On the other hand, the straight-away succession of geo-ethnic units seriated according to geographic position (Fig. 1), though necessarily falling short in some minor respects, presents the great advantage of simplicity and directness. Units of all sizes are accommodated with equal facility—if a group be small a limited space can be assigned; if a group be large, a larger space or even an entire hall may be devoted to it. Comparative studies in the various culture-branches are carried on with reasonable ease, since a particular subject or class of exhibits has, as far as may be, the same relative place in each of the groups. Each culture feature may be studied to best advantage in actual contact with the other features of its own group, that is to say, the pottery of a particular group can better be studied in its own setting of related arts—basketry, sculpture, wood carving, etc.—than it can if separated from them.

The geo-ethnic assemblage of exhibits is generally applicable and affords many advantages, giving at once to ordinary visitors and to students a comprehensive notion of the peoples of the world and their culture in their true proportions and relations. It should be the fundamental arrangement in every general anthropological museum.

### THE CULTURE-HISTORY ARRANGEMENT.

But this is not all that the museum can do to illustrate the history of man. Perhaps the greatest fact of humanity is its evolution. By the geo-ethnic arrangement just described we may amply present the peoples of the world, ancient and modern, and yet fail to convey any definite notion of the development of culture—of the progress of arts and industries, and the gradual unfolding of the human mind. These lessons of evolution may be conveyed by assembling artifacts representing the various activities, and seriating them according to the stage of culture which they

happen to represent. These series may be called culture-history, or culture-development series, and although they are not true genetic series, since the forms cannot be said to have arisen one out of another, they may in a general way stand for the genetic order, suggesting forcibly the manner in which one step necessarily gave rise to another from the lowest to the highest throughout all culture history.

These culture history series may be numerous and extremely varied in character. They may be mere synopses, giving only the great or epoch-making steps of progress, or they may embody many objects brought together from every part of the world. The curator may select only those branches susceptible of ready and effective illustration, the steps of progress being represented by the tools, utensils and devices employed in the practice of the art, or by the products where such exist.

A number of the more important series are included in the list which follows, where they are classified under a dozen or more heads. A majority of these series are now included in the exhibits of the National Museum.

In the *first* group are placed all those activities whose function is that of acquiring or producing the raw materials of subsistence or culture.

1. Plant gathering, agriculture, horticulture, forestry, etc. Illustrated by the implements and utensils used in (*a*) collecting, (*b*) cultivating the soil, (*c*) harvesting the crops.

2. Hunting and fishing and zooculture. Illustrated by (*a*) weapons, (*b*) traps and snares, (*c*) hooks and tackle, (*d*) appliances of domestication and culture.

3. Mineral collecting, quarrying and mining. Illustrated by mining implements and machinery.

In the *second* group are included the activities that prepare the raw materials for use, a few of which are as follows:

1. The building arts. Illustrated by (*a*) models of the house, (*b*) models of furniture, (*c*) models of water craft, (*d*) models of machinery, (*e*) devices used in construction.

2. The textile arts. Illustrated by (*a*) basketry-making appliances and products, (*b*) spinning appliances, and products, (*c*) the loom and loom products, (*d*) sewing and netting appliances, and products.

3. The sculptural arts. Illustrated by (*a*) implements for shaping stone, and products, (*b*) implements for carving wood, and products.

4. The plastic arts. Illustrated by (*a*) implements for modeling in clay, wax and other plastic substances, and products, (*b*) utensils and appliances for glass-making, and products.

5. The metallurgic arts. Illustrated by (*a*) metal-producing appliances, (*b*) metal-shaping tools and utensils, and products.

6. The graphic arts. Illustrated by (*a*) drawing and painting, (*b*) writing, (*c*) engraving, (*d*) printing, (*e*) photography. (Appliances and products in each case.)

7. Food-preparing arts. Illustrated by (*a*) contrivance for milling, (*b*) cooking appliances.

In the *third* group are the arts employing natural forces, as:

1. The use of light and heat. Illustrated by (*a*) devices for striking fire, (*b*) lighting appliances, (*c*) heating appliances.

2. Use of animal power. Illustrated by (*a*) devices for harnessing men, (*b*) devices for harnessing animals.

3. Use of water power. Illustrated by (*a*) water-wheel, (*b*) the hydraulic engine.

4. Use of wind power. Illustrated by (*a*) the sail, (*b*) the wind-mill, (*c*) the kite, (*d*) the flying-machine.

5. Use of steam power. Illustrated by the steam-engine.

6. Use of electric power. Illustrated by (*a*) the magnet, (*b*) telegraphic transmitters, receivers and insulators, (*c*) telephone apparatus, (*d*) the motor.

In the *fourth* group are implements of general use. Illustrated by (*a*) the hammer, (*b*) the knife, (*c*) the scraper, (*d*) the saw, (*e*) the ax, (*f*) the adz, (*g*) the drill, etc.

In the *fifth* group are the metric arts:

1. Counting. Illustrated by tallies and computing devices.

2. Time-keeping. Illustrated by (*a*) sun-dials, (*b*) hour-glasses, (*c*) watches and clocks, (*d*) chronographs.

3. Weighing. Illustrated by (*a*) balance scales, (*b*) spring scales.

4. Measuring (linear). Illustrated by (*a*) linear scales, (*b*) dividers.

5. Surveying. Illustrated by (*a*) compass, (*b*) theodolite.

In the *sixth* group are transportation arts:

1. Land transportation. Illustrated by (*a*) burden-bearing devices, (*b*) sliding vehicles, (*c*) rolling vehicles, (*d*) wheeled vehicles.

2. Water transportation. Illustrated by (*a*) the vessel, (*b*) the sail, (*c*) the propeller, (*d*) the rudder.

3. Air transportation. Illustrated by (*a*) the sail, (*b*) the balloon, (*c*) the flying-machine.

In the *seventh* group are the arts of war. Illustrated by (*a*) weapons, (*b*) armor, (*c*) fortifications.

In the *eighth* group are alimentary arts:

1. Eating and drinking. Illustrated by utensils and appliances.

2. Use of nicotine and narcotics. Illustrated by utensils and appliances for smoking, chewing, snuffing.

In the *ninth* group are costume arts. Illustrated by (*a*) dress, (*b*) jewelry, (*c*) tattooing.

In the *tenth* group are diversional arts, a few of which can be illustrated:

1. Games of skill, ball, etc.
2. Games of chance, playing cards, etc.
3. Toys, dolls, etc.

In addition, other groups may be mentioned as follows:

*Eleventh,* the art of music. Illustrated by musical instruments.

*Twelfth,* religious and other ceremonials. Illustrated by idols, symbols and paraphernalia.

*Thirteenth,* arts of commerce. Illustrated by coins and other forms of money.

*Fourteenth,* pathological arts. Illustrated by devices employed in medical practice and surgery.

These series may, when properly selected and arranged, afford striking and easily understood illustrations of the history of culture as recorded in material things. Some of the branches are of primordial origin, covering the whole range of progress, such as building, weaving and adornment arts, while others have arisen in recent times, such as printing, photography, the use of steam, electricity, etc.; but all alike furnish faithful records of the intellectual evolution of humanity.

The degree of elaboration in any branch of the exhibits must depend on the space available and on the materials at hand. A few specimens may form a most instructive synopsis, emphasizing the great steps of progress; while on the other hand, a single branch may embody extensive series of objects, as well illustrated in the collections of the Pitt-Rivers Museum, Oxford, where every available form of artifact is exhibited, covering not only the full range from lowest to highest, but indicating the forms peculiar to distinct peoples.

These series of exhibits, arranged to illustrate the development of culture in general, do not relate to any particular people or area, but represent all peoples and all areas. They cannot, therefore, be installed in direct association with the geo-ethnic series, but must occupy a separate space in the museum.

### SPECIAL CULTURE SERIES.

Two great classes of culture exhibits have now been described. First, the *geo-ethnic* series illustrating groups of men and their works assembled by geographical areas, and second, the *culture-history* series illustrating the achievements of the race in various important branches of activity. Now it happens that there are numerous subjects worthy of museum illustration that cannot be presented in either of these series of exhibits without confusion, and these, therefore, call for independent or isolated installation. It is proposed to group them under the head of *special* ex-

hibits, and they may be as numerous and varied as we choose. Some of them may cover limited portions of the culture field, while others are general, comprehending a wide range. They may be classified and arranged in various ways, according to the nature of the concept to be developed; some may be chronologic, some comparative, others cyclopedic, and so on. A national exhibit, that is to say one intended to illustrate the history of a nation may be arranged chronologically, as in the historical exhibit of our National Museum. Here the successive periods, marked by important episodes, are as follows:

(1) Discovery, (2) Colonization, (3) Revolution, (4) War of 1812, (5) Mexican war, (6) Civil war, (7) War with Spain, etc. Within this series and forming part of it are special exhibits, as those representing public personages. In the section illustrating the revolutionary period, for example, there is a minor exhibit relating to Washington, and consisting of various articles, personal and otherwise, arranged for effect or according to relative importance of the relics. This national exhibit is not a true geo-ethnic unit since it covers only three of four centuries of the ethnic history of the area included, and although arranged chronologically, it is not illustrative of culture in the broadest sense.

A collection of paintings is susceptible of varied special treatment. It may be arranged (1) chronologically, (2) by countries, (3) by schools or (4) by painters. An exhibit of book-bindings might represent the work of (1) an individual, (2) a firm, (3) a school, (4) a period, and so on.

Special comparative exhibits may be of much interest and value. They may be synoptical or cyclopedic. An exhibit of bows and arrows, for example, may be synoptic, containing only typical examples from the various regions and peoples, or cyclopedic, containing all available specimens from all sources.

The culture exhibits for a museum of anthropology may thus best be assembled in at least three distinct divisions, each illustrating a different kind of unit of culture and serving to convey distinct classes of information, or the same kind of information in different ways. So the museum space allotted to culture is separated into three parts, accommodating the geo-ethnic groups, the culture-history series, and the special exhibits.

### GEO-ETHNIC GROUPING ILLUSTRATED.

The significance of the geo-ethnic exhibits already described will be readily understood by referring to Fig. 5, a map of North America, on which are outlined in the most general way some of the principal geo-ethnic or geographical culture districts—the characterization-areas of the continent. These areas are not always well defined and there is a good deal of overlapping and ethnic intermingling. In some cases it is difficult to say of a particular area which tribe should be taken as a type, and the materials at hand must decide this, since only those tribes can be systematically shown from which collections are ample. In the main, however, the delimitations are sufficiently definite for all practical purposes. The areas suggesting themselves are as follows:

1. Eastern Arctic area (Eastern Eskimo).
2. Western Arctic area (Western Eskimo).
3. McKenzie-Yukon area (Tinneh).
4. Northwest coast area (Tlinkit, Salish).
5. Columbia River area (Nez Percé, Chinook).
6. California area (Klamath, Tulare).
7. Great Basin area (Bannock, Ute).
8. Colorado-Rio Grande arid area (Pueblo, Apache).

9. Great Plains area (Blackfoot, Kiowa).

10. Great Lakes and North Atlantic area (Chippewa, Iroquois).

11. South Atlantic and Gulf area (Seminole, Choctaw).

12. Arkansas-Texas area (Wichita, Caddo).

16. South Mexican area (Zapotec, Miztec).

17. Yucatan-Guatemalan area (Maya, Maya-Quicha).

18. Costa Rican Isthmian area (Mosquito, Chibché).

19. West Indian area (Carib, Arawak).


FIG. 5. Map of North America, indicating in a general way the ethnic provinces.

13. Northeast Mexico and Rio Grande area.

14. Sonoran area (Mojave, Huichol).

15. Central Mexican area (Aztec, Otomi).

In all these cases we deal exclusively with the native ethnology, as the superposed European culture is too widely distributed to be treated by limited districts, and transportation from region to region is now so

easy that a particular or peculiar environment is no longer capable of impressing its stamp upon its people and art. Modern culture has to be treated by artificial, not natural, areas, and is becoming so generalized that distinctions of art are disappearing, and we must illustrate it, if we illustrate it at all, in one cosmopolitan group. But let us see what these culture areas mean.

It must have been an untoward chain of circumstances that drove the Eskimo peoples into the frozen zone (areas 1 and 2, Fig. 5) occupied by them, for at first glance it would seem that human creatures could not survive even for a year in such an environment; but they found means of living, and withal are a healthy and energetic people. But their culture is necessarily very circumscribed and exceptional, developed as it was in, or modified by, the peculiar surroundings. These people necessarily have clothing, but as the garments are of skins and furs, the textile art is almost unknown. They must also have fire, but their fuel is fat. They venture out in boats to capture the seal, but as they have little wood their boats are made of skins, and are distinct from the boats of other groups. They travel by land also; but their vehicles are on runners and made of driftwood and bone. They hunt game, but as this consists largely of marine animals, they have invented peculiar weapons and appliances. They build houses, but these are unlike those of any other climate in the world, being often made of whale bones or of frozen snow. They carve curious figures in ivory, bone and wood, but these have no parallel among other peoples. They have no pottery, because the climate is not favorable to its development, but also largely because they do not commonly cook their food. Notwithstanding their most dreary and inhospitable surroundings, they are a clever people and invent and use the most cunning traps, snares and weapons in the world. They are a cheerful people, and enjoy existence in their way as keenly perhaps as the more favorably situated peoples.

Can the culture phenomena of any other region or climate be as peculiar and remarkable as this? Strange to say, this is not a rare instance of individuality in culture development and characteristics. Take the area marked 4 on the map and note what strange contrasts occur. Area 1 has no wood, but in area 4 wood abounds; there the great cedar and the shapely spruce grow, and the ingenious tribes of Indians have used them extensively. So important a feature of this environment are they that the culture phenomena—the arts—are largely regulated by them. The people go to sea in boats, but they are not boats of skin; they are made of the noble cedar trunk, and the stable craft are well shaped and beautifully carved and painted. The people live in houses, but these are not of snow or whale bones, but of wood of the hemlock. Their houses are also works of art, with carved and painted ornaments, and supplemented by wonderful totem poles sculptured in the most fanciful forms. The hemlock and the spruce have made these peoples a race of builders and sculptors. They do not wear skins exclusively, but have woven garments, because the cedar bark and the wool of the mountain goat make the textile art easy. They do not make pottery, but they carve the yellow spruce into wonderful vessels, spoons and chests, and they have transferred their skill in carving to stone, and now are veritable sculptors, made so because the forest trees of this particular environment dictated the lines in which many features of their culture should grow.

It is unnecessary to go further into details, as the reasons are clear for assem-

bling our ethnical collections by geographical areas, and it only remains to indicate in some detail how these collections are to be grouped and displayed in the museum.

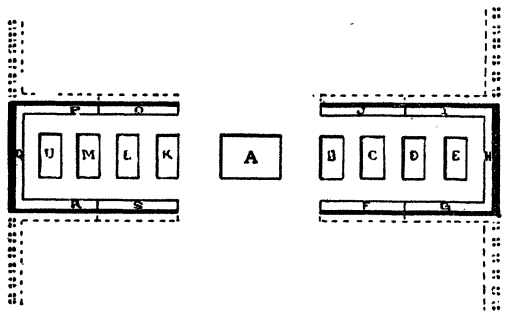


FIG. 6. Geo-ethnic unit. *A*, Lay-figure group, case 8 by 12 feet; *B*, House models; *C*, Boat models; *D*, Sledge models, harness, snow-shoes, etc.

In the accompanying diagram (Fig. 6) we have a scheme for arranging one of the geo-ethnic units. The area selected is that of the Eastern Eskimo (area 1 on the map). In the center of the exhibition hall we place the group of life-size figures, *A* (Fig. 6), showing how the people look and, as far as possible, what they think and do and have. This is the key to the exhibit—the most essential feature, and one from which the most casual observer can get a definite conception of the people and their culture. The particular episode depicted in the group, shown in Fig. 7, was selected for the purpose of illustrating, amongst other things, the cheerful disposition of those farthest-north people. Then ranged around this group should be cases containing everything that will serve to indicate more fully and accurately the nature of their activities and culture. Case *B* should contain models of the various forms of dwellings—the snow-house, the earth-covered hut and the improvised shelter, with all varieties of attendant structures; Case *C*, models of their boats, while actual examples may be placed near at hand if space permits; Case *D*, their sledges, snow-shoes, etc., the sledges represented mainly

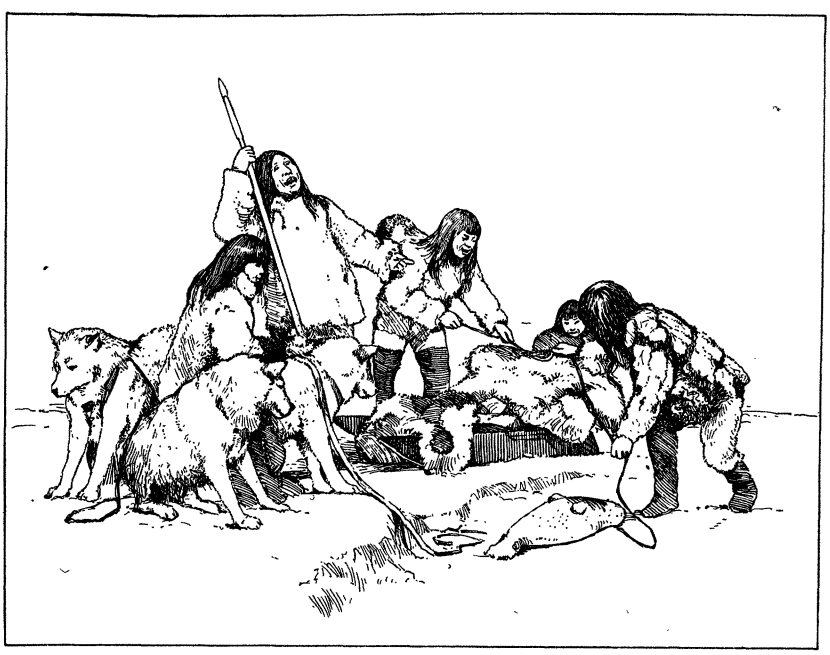

FIG. 7. Lay-figure family group of Greenland Eskimo.

by small scale models; Case *E*, their hunting weapons, traps and snares; Case *F*, their fishing implements and apparatus; Case *G*, their knives and other tools of general use; Case *H*, their lamps; Case *I*, their carvings and graphic art; Case *J*, their clothing and personal ornaments in detail; Case *K*, their toys, dolls and masks; and so on. A reasonable space should be devoted to crania, casts from life, and pictures showing physical characters. Such archeological material as pertains to the region should also be shown. Where there are striking distinctions between the northern, the central and the Labrador group of these Eskimo, duplicate exhibits should be installed and separate lay figures of men, women and children prepared to illustrate important variations in physique and costume. The manner of arranging the specimens of the several exhibits in their cases is necessarily much varied, and it does not seem advis-

(*a*)

Aborigines of North America
The Eskimo

(*b*)

The Eastern Eskimo
Family Group of Smith Sound

(*c*)

FAMILY GROUP OF THE SMITH SOUND ESKIMO.
TYPE OF THE EASTERN ARCTIC REGION.

This exhibit shows an Eskimo family of Smith Sound, in northwestern Greenland. The Smith Sound Eskimo are called the Arctic Highlanders and are the most northern people in the known world. On account of the prevalence of ice they do not have the kaiak, or skin canoe, but use the dog sled for transportation. Their clothing is from skins of seal, reindeer, birds and dogs, and their houses are of snow. Nearly all of their activities are associated with the struggle for existence, and little attention is given to art work.

This group represents the family as it might appear in the spring, moving across the ice fields. The young man has succeeded in clubbing a small seal, and the others are having a laugh at his expense for calling on the dog team to haul it home when he could have carried it on his back. It is remarkable that these farthest north people are exceptionally cheerful in disposition, notwithstanding the rigor of the climate and the hardships of their life. The woman who carries a babe in her hood is about to help attach the seal to the sledge; and the girl who plays with the dogs, and the boy who clings to the back of the sledge, enjoy the confusion of the young hunter.

Designed by W. H. Holmes; modeled by H. J. Ellicott.

able to enter further into the details in this place.

The labels required in this ethnic unit are as follows: (*a*) *A sign,* about 12 by 24 inches to be suspended above the exhibit, serving to correlate it with the associated descriptive label, which go with each exhibit, referring to it as a whole, all save the family group require labels for the individual specimens. One example of these *specimen labels* (*d*), taken from the dwelling group series may be given:

(*d*)

DWELLING GROUP OF THE CENTRAL ESKIMO.

TYPE OF THE ARCTIC REGION.

The Central Eskimo live on the area between Hudson Strait and Baffin Bay. Their winter houses are built of blocks of snow laid up in a spiral manner, forming a dome. The blocks are about three feet long, two feet high and six inches thick. The main chamber of the house varies from five to twelve feet in height, and from seven to fifteen feet in diameter. Over the entrance a square is cut out and covered with seal intestine for a window. The dome is connected by passageways with one or more outbuildings or packing rooms. In the summer the natives fish in the open water; in winter seals are taken by nets set under the ice. Dogs are attached to the sled by separate lines. The clothing of the men and women is made from skins of seal and deer, and consists of outside and inside trousers, jackets (those of the women having hoods), boots, and inside boots or socks made of light deer skin or bird skin.

This group forms one of a series designed to set forth the dwellings and home life of native tribes in the Western Hemisphere.

units in the Museum series. (*b*) *Case label,* about 5 by 16 inches, to be framed and placed on or immediately above each case to designate its contents in a general way and expressive of the broadest classification. The case label for the family group is as shown above.

(*c*) *Descriptive label,* about 8 by 10 inches, two copies to be framed and hung in each exhibition case near the level of the eye. That for the family group is shown. Beside the case label and the general

CULTURE-HISTORY SERIES ILLUSTRATED.

The nature of the *geo-ethnic* or *specialization area* assemblage of the culture materials of the world has been sufficiently shown in the preceding pages. It is the first and most important method for a general museum. It remains now to explain briefly the nature of the *culture history* installation, a partial list of the available exhibition units of this class having already been given.

In Fig. 8, we have a scheme for placing

and labeling a series of exhibits illustrating progressive steps in the art of sculpture. The other series are to be treated in like manner. This art began very early in the career of the race and in forms so simple that they would not at first be recognized as belonging to the art of sculpture by the

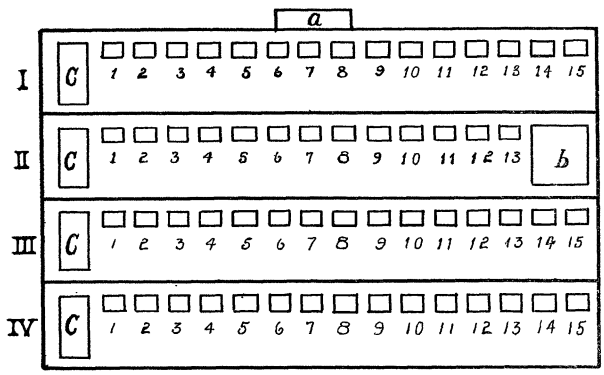


Fig. 8. Arrangement of a synoptic exhibit illustrating the history of sculpture as elaborated in the U. S. National Museum. *I.*, Series of tools and appliances. *II.*, Series of aboriginal American sculptures. *III.*, Series of oriental sculptures. *IV.*, Series of Mediterranean sculptures. *a*, Case label. *b*, General descriptive label. *cccc*, Series labels. 1, 2, 3, 4, etc., Specimen labels.

unscientific student. We are able to trace it more fully than any other art because its products are in stone which is not seriously affected by lapse of time. Then again, the tribes and nations of to-day are found to be practicing every known step in the art, from the most elementary to the most highly perfected, so that its whole history comes well within the range of present observation, and examples of the tools and the work are available. The first conscious step in the art was probably that of fracturing one flinty stone with another, with the view of securing a sharp edge for cutting and scraping. Three other processes that must have come early into use are those of shaping by pecking, by grinding and by cutting, and for a long period of human progress the only sculpture consisted of shaping useful implements by these methods. Even to-day these are the processes mainly used, the tools and appliances being simple with primitive people and more highly developed among cultured nations. Mechanical aids of considerable complexity are sometimes employed by our modern sculptors.

The first group of exhibits illustrating the history of the art may well consist of a progressive series of the shaping implements and devices, while two or more additional series may show the sculptured products.

In the first stages of the art only simple useful articles were made; later these were elaborated esthetically and personal ornaments were added; then gradually the processes were applied to working out the rude block-like, imperfectly proportioned figures of animals and men; these were totems, fetiches and idols, and illustrate a third stage in our progressive series. Later still, portraiture was attempted and a kind of rigid formal likeness was worked out, marking a fourth step. Then with the higher nations, correct form and expression came into being, and finally the realistic and ideal work represented by the highest Greek art was developed. Exhibits illustrating the more advanced phases should embody originals of the smaller objects and small-scale reproductions of the larger. If collections are ample, it will prove interesting to treat the development of the art on each continent or in each great cultural province separately, as indicated in Fig. 8, thus affording facilities for interesting comparative studies. America may furnish one series of exhibits in which the course of development through the several primitive grades up to the stage of well relieved figures and rude portraiture is traced (16 numbers). The Orient may afford a series somewhat more complete (18 numbers), and the Mediterranean province yields il-

(a)

History of the Arts and Industries.
Synopsis of the Art of Sculpture.

(b)

SERIES 2. ABORIGINAL AMERICAN SCULPTURE.

The American tribes displayed a strong predilection for sculpture. They shaped their stone implements with great skill, and delighted in representing animal forms. Religious motives inspired most of the more elaborate work, although esthetic appreciation was not wanting.

The series of objects here presented covers nearly the full range of native achievement, although the best examples shown fall short of the highest types of Aztec and Maya work. The simpler forms are placed at the left, and a series of progressive steps lead up to the higher forms at the right. It is believed by some that germs of culture have occasionally reached America from other lands and that sculpture on this continent is not wholly of native growth.

The practice of the art in its higher forms has, for the most part, been abandoned by the native tribes, but stone implements and utensils are still made in some remote districts.

(c)

HISTORY OF SCULPTURE.

The term sculpture is here applied to the whole range of processes and products pertaining to the shaping of stone, but does not extend to the carving of wood, bone, ivory, or other like substances, the modeling of plastic materials or the shaping of metals. The products of the art, briefly epitomized in this exhibit, constitute a most important record of human progress, for they tell not only a story of technical and industrial development but throw many side lights on the history of religion, esthetics and general culture. It is observed that with very primitive peoples the shaped forms are implements and utensils merely, but that with advancing culture ornaments are made and life forms gradually appear, and that in civilization realistic and ideal phases of the art are dominant.

In this exhibit we have to deal with two classes of artifacts; first, the implements and appliances used in manufacture, and second, the shaped product. The shaping processes include flaking, pecking, cutting and grinding in their various forms, and the implements and devices used are in the main extremely simple even in the advanced stages of the art. The implements are arranged in progressive order in Series 1, and the sculptured product in some of its varied phases appears in Series 2, 3 and 4. Series 2 indicates the range of native American work; Series 3, the sculpture of the Orient; and Series 4, the full scope of the art as developed on the shores of the Mediterranean.

(*d*)

No. 13.—Human and animal figures combined in a miniature totem pole, sculptured in partial relief, material black slate, shaped with metal tools. Northwest Coast Indians. Period recent. 178,064

(*d*)

No. 14.—Human figure, fully relieved, but falling short of the best Central American work. Material gray, porous lava. Probably shaped with stone tools. Precolumbian period. 61,814

lustrations covering the same ground and besides furnished additional steps up to the highest achievements of human genius in this art (20 numbers).

Four kinds of labels are required for the sculpture exhibits as follows:

(*a*) *Case label,* about 4 by 16 inches; framed and placed at the top of the case *A* (Fig. 8).

(*b*) *Group label* descriptive of the entire exhibit; size about 8 by 10 inches; framed and hung at a suitable height within the case (*B*, Fig. 8).

(*c*) *Series label,* to be placed at the beginning of each series. The example given pertains to Series 2 of the sculpture exhibit (*C*, Fig. 8).

(*d*) *Specimen label,* briefly describing the specimen, and placed with it in each instance. The examples given belong to specimens 13 and 14 of the American Series (*D*, Fig. 8) as installed in the National Museum.

The sculpture exhibit as installed in the National Museum occupies a space 5 feet high, 8 feet 6 inches long and 12 inches deep. It includes about 100 specimens and 60 labels.

The ends to be subserved by the exhibits of a general anthropological museum are mainly those of education, and the aim of the classification and arrangement here proposed is to so present the collections that the student as well as the ordinary museum visitor may secure the maximum benefit from them. As indicated at length in the preceding pages, the three great ideas capable of satisfactory presentation are: (1) the biology of the race—the origin, evolution and present characteristics of physical man; (2) the ethnology of the race—the various groups of people and their culture; (3) the history of culture—the evolution of arts and industries. To these three series a fourth is added, which consists of various special exhibits, each teaching its individual lesson. The anthropological collections are thus assembled in four grand divisions separately installed.

W. H. Holmes.

U. S. National Museum.

## *A BIOLOGICAL FARM FOR THE EXPERIMENTAL INVESTIGATION OF HEREDITY, VARIATION AND EVOLUTION, AND FOR THE STUDY OF LIFE-HISTORIES, HABITS, INSTINCTS AND INTELLIGENCE.**

The biological laboratories of to-day, in design, equipment and staff, are almost exclusively limited to the study of *dead* material. Living organisms may find a place in small aquaria or vivaria, but they are reserved, as a rule, not for study, but for fresh supplies of dead material. It is no disparagement of the laboratory to point out a broad limitation in its ordinary functions and the pressing need of new facilities for observation and experiment on *living* organisms.

The fundamental problems of heredity, variation, adaptation and evolution cannot be wholly settled in the laboratory. They concern vital processes known only in living organisms—processes which are slow and

* Read to the Corporation of the Marine Biological Laboratory, at the annual meeting, August 12, 1902.