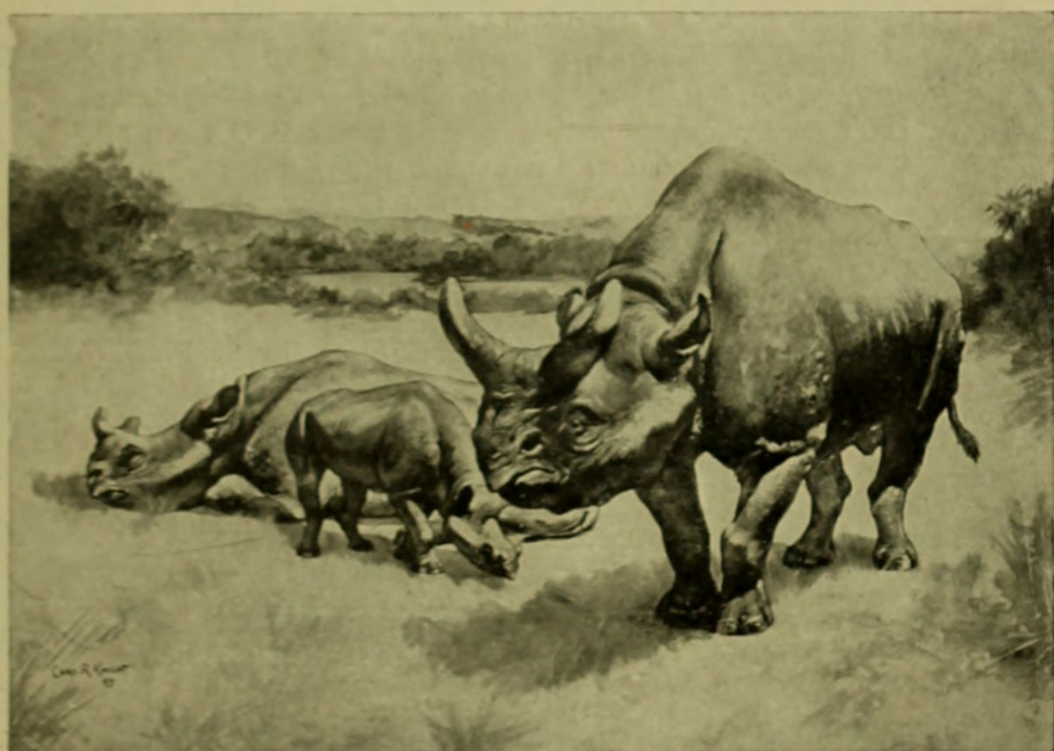


AMERICAN MUSEUM OF NATURAL HISTORY

The Hall of Fossil Vertebrates



BY

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THE HALL OF FOSSIL VERTEBRATES

THE HALL OF FOSSIL VERTEBRATES.

By W. D. MATTHEW, Ph.D.,

Assistant Curator, Department of Vertebrate Palæontology.

INTRODUCTION.

WHEN we dig beneath the present surface of the ground we sometimes find remains of ancient cities, dwellings, bones of men and animals, buried many centuries ago under accumulations of debris, deposits of river mud or drifted sand. From these we learn many facts concerning the early history of mankind of which there is no written chronicle. From the study of these facts the science of Archæology has arisen, and it deals with the early history of mankind, with the evolution of civilization.

Most of the animals of which the archæologist finds traces are like those now living, although a few have become extinct. But in those more ancient deposits which are now consolidated into clays, sandstones etc., indications of man are not found, and the remains of animals which they contain are unlike any now living—the more unlike as the rock is more ancient. These remains are called *Fossils*. They consist only of the hard parts of animals (bones, shells, spines etc.). The soft parts are never preserved, and only very rarely is some trace of skin or hair, horns or hoofs, to be distinguished. As in the course of ages the mud or sand in which they are buried changes to rock, so little by little the fossils have been changed into a brittle, stony material, while retaining their outward form and usually their peculiar structure. But as mud and clay, in changing into rock, settle down and contract considerably, so also the fossils are flattened out to a corresponding extent—sometimes so much, in the case of a rock which has once been a soft oozy mud, that they suggest rather a picture or a bas-relief than the original form of the animal.

From fossils we can interpret the history of the world of life during the long ages before man appeared. The science which deals with the ancient history and evolution of the animal kingdom is Palæontology (παλᾱίος, ancient, ὄντα, living beings,

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-λογία, science). It tells us of a long period of time before Man appeared, probably millions of years, during which Mammals of great size and unfamiliar form were the dominant animals—of a yet longer era before that, during which huge Reptiles were rulers of earth, sea and air—and of other more ancient periods during which Amphibians, Fish and Invertebrate animals held sway in turn. Vertebrate Palæontology deals only with the higher classes of fossil animals, the Vertebrata, or those that have backbones (fish, amphibians, reptiles, birds and mammals). For fossils of this kind the Bad-Lands of the Western States are the richest field, and from there came nearly all the specimens in this hall, the greater part of which have been found within the last ten years. The hall was opened in 1895.¹ At the time of writing, thirty complete skeletons of extinct animals have been placed on exhibition, besides many times that number of skulls, limbs and other imperfect specimens.

To give the visitor a clear idea of these extinct animals, the skeletons usually have been removed entirely from the rock in which they were found and have been mounted as much as possible like skeletons of modern animals; their probable appearance and habits are described by the labels and illustrated by water-color restorations. The especial interest of the hall lies in the fact that it shows so many of the data upon which are based the theories of Evolution. The arrangement of the specimens is intended to show the history or evolution of different races of animals, chiefly in North America. All the specimens of one race or kind of animal have been placed together, the most ancient first, the most recent last. All the skeletons in this hall are those of extinct animals.² The *Mastodon* and *Great Irish Deer* are half-petrified bone dug out of peat bogs. All the others are petrified (*i. e.*, they have been buried so long that they have been converted from bone into stone), and have been chiseled out of the solid rock. The *Megatherium* is a plaster cast, taken from bones from

¹ A brief history of the Department will be found in the number of this JOURNAL for November–December, 1901.

² Four small skeletons, those of the Raccoon, Cat, Opossum and young Lamb, have been placed in the cases near their extinct relatives, for comparison.

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South America now in the museum of the Royal College of Surgeons, London. Some of the skeletons are partly restored in plaster, indicated by a red cross (restored bones) or red lines (outlines of restored parts of bones). Bones supplied from other specimens are marked with the catalogue number of the specimen or are indicated by a red circle, if uncatalogued.

GEOLOGICAL AGES AND PERIODS.

Cenozoic	Quaternary	Age of Man, 50,000 years
	Tertiary	Age of Mammals, 3,000,000 years
Mesozoic	Cretaceous	Age of Reptiles, 7,000,000 years
	Jurassic	
	Triassic	
Palæozoic	Permian	Age of Amphibians and Coal Plants, 5,000,000 years
	Carboniferous	
	Devonian	Age of Fishes, 2,000,000 years
	Silurian	Age of Invertebrates, 10,000,000 years
	Cambrian	
Eozoic	Algonkian	(No fossils)
	Archæan	

These estimates in years of the geological periods given in the accompanying table, which is arranged in descending order from the most recent to the most ancient time, must be understood to be merely very rough approximations. There is no known method of finding any exact equivalent in years of any geological period, although the relative length of each to each is

THE AGE OF REPTILES

(MESOZOIC)

GEOLOGICAL FORMATIONS and CHARACTERISTIC ANIMALS.

THE AGE OF REPTILES PRECEDED THE AGE OF MAMMALS, AND IS REPRESENTED IN VARIOUS PARTS OF THE WORLD BY MARINE, ESTUARY AND FRESH-WATER DEPOSITS, DIVIDED INTO THREE GREAT PERIODS, TRIASSIC, JURASSIC AND CRETACEOUS.

DURING THIS AGE THE REPTILES APPEARED, FLOURISHED GREATLY, AND DECLINED AT ITS CLOSE TO THEIR PRESENT IMPORTANCE. THE MAMMALS APPEARED WELL DOWN IN THIS AGE BUT REMAINED SMALL AND SCARCE UNTIL ITS END.

PERIODS	FORMATIONS	THICKNESS	CHARACTERISTIC ANIMALS
AGE OF MAMMALS	EOCENE		
	TORREJON		MAMMALS IN LARGE NUMBERS
	PUERCO	800	TRUE LIZARDS and SPHENODONS ALLIGATORS and CROCODILES TURTLES NUMEROUS BONY FISHES (TELEOSTS)
AGE OF REPTILES	UPPER CRETACEOUS		
			CARNIVOROUS DINOSAURS HERBIVOROUS DINOSAURS HORNED (HERBIVOROUS) DINOSAURS
		1000	NUMEROUS SMALL MAMMALS
		5000	LAST PLESIOSAURS FIRST SOFT-SHELLED TURTLES MODERN TAILED AMPHIBIANS (SALAMANDERS)
			BIRDS, PROBABLY TOOTHED PTERODACTYLS, TOOTHLESS
		1200	MOSASAURS and PLESIOSAURS
	LOWER CRETACEOUS	8700	GIGANTIC MARINE TURTLES DOLICHOSAURIAN LIZARDS SHARKS, CAT-FISH, STURGEONS and CAR-PIKES
			TOOTHED BIRDS, TOOTHLESS PTERODACTYLS
		1000	DINOSAURS
		3000	MOSASAURS and PLESIOSAURS LARGE MARINE TURTLES BONY FISHES (TELEOSTS), SHARKS GANOID FISHES
		400	FIRST SNAKES
		5000	TURTLES
AGE OF REPTILES	UPPER JURASSIC		
			TRUE LIZARDS and DOLICHOSAURS HERBIVOROUS DINOSAURS (IGUANODONTS) CARNIVOROUS DINOSAURS (MEGALOSAURS)
			PTERODACTYLS, TOOTHED and TOOTHLESS
		300	MOSASAURS
		2600	ICHTHYOSAURS and PLESIOSAURS CROCODILES, TURTLES. SHARKS and GANOID FISHES CHIMÆROID FISHES
	LOWER JURASSIC		
			PRIMITIVE MAMMALS (MARSUPIALS, INSECTIVORES and MULTITUBerculATES)
			CARNIVOROUS DINOSAURS (CERATOSAURUS)
			HERBIVOROUS DINOSAURS (ATLANTOSAURUS)
AGE OF REPTILES	UPPER TRIASSIC		
			TURTLES, PTERODACTYLS
			FIRST BIRDS WITH TEETH (SAURURUS)
		1500	ICHTHYOSAURS (TOOTHED and TOOTHLESS)
	LOWER TRIASSIC	4000	PLESIOSAURS, PTERODACTYLS (TOOTHED)
			SMALL PRIMITIVE MAMMALS
			LONG NOSED CROCODILES (TELEOSAURS)
			ICHTHYOSAURS and PLESIOSAURS
AGE OF AMPHIBIANS AND COAL PLANTS	UPPER PERMIAN		
			FIRST HERBIVOROUS DINOSAURS
			FIRST PTERODACTYLS
			SHARKS, CHONDROSTEAN and LUNG FISHES
	LOWER PERMIAN	3000	PLESIOSAURS (NOTHOSAURS)
		6000	FIRST ICHTHYOSAURS (MIXOSAURS)
			PLACODONTS
			LARGE AMPHIBIANS (LABYRINTHODONTS)
AGE OF AMPHIBIANS AND COAL PLANTS	UPPER CARBONIFEROUS		
			FIRST PLESIOSAURS (NOTHOSAURS)
	LOWER CARBONIFEROUS		
			FIRST REPTILES (COYLOSAURS, PROGANOSAURS and PELYCOSAURS)
		600	PRIMITIVE AMPHIBIANS (STEGOCEPHALIA)
		1000	SHARKS, LUNG FISHES. CHONDROSTEAN and CROSSOPTERYGIAN FISHES
AGE OF AMPHIBIANS AND COAL PLANTS	UPPER TRIASSIC		
			PRIMITIVE AMPHIBIANS (STEGOCEPHALIA, MOSTLY SMALL SPECIES)
			PRIMITIVE SHARKS and LUNG FISHES
			CHONDROSTEAN and CROSSOPTERYGIAN FISHES
	LOWER TRIASSIC		
	UPPER JURASSIC		

THE AGE OF MAMMALS

(CENOZOIC, OR TERTIARY AND QUATERNARY.)

WESTERN LAKE BASINS and CHARACTERISTIC MAMMALS*

THE TERTIARY FORMATIONS ARE REPRESENTED IN WESTERN AMERICA BY A SERIES OF DEPOSITS FORMED ON THE BOTTOMS OF SUCCESSIVE FRESH WATER LAKES. THEIR TOTAL THICKNESS IS NEARLY 12000 FEET, REQUIRING PROBABLY TWO OR THREE MILLION YEARS TO FORM

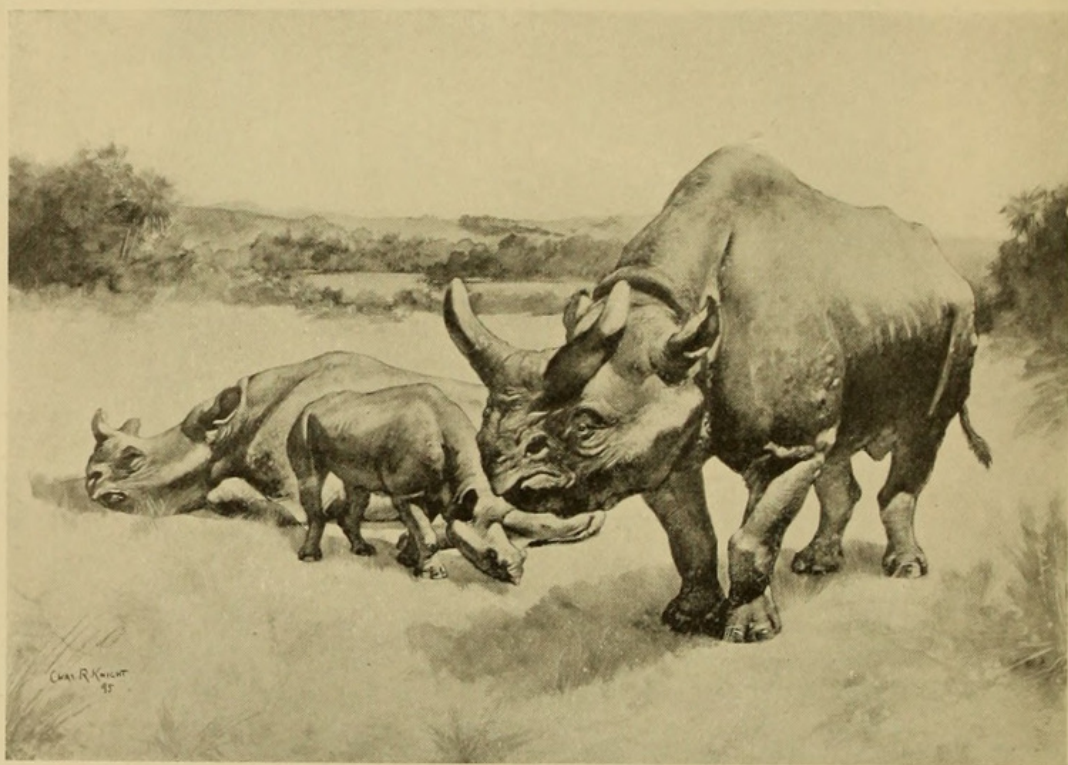
IN THE SEDIMENTS OF THESE LAKES WERE BURIED THE REMAINS OF MANY OF THE ANIMALS WHICH LIVED AROUND THEIR SHORES, LEAVING THUS A RECORD OF THE SUCCESSIVE SPECIES WHICH INHABITED THE LAKE REGION

PERIODS	LAKE BASINS	THICKNESS	CHARACTERISTIC MAMMALS
AGE OF MAMMALS	RECENT AND PLEISTOCENE	150	ELEPHANTS, LAST MASTODONS, LAST GROUND SLOTHS, LAST SABRE-TOOTH TIGERS, CAMELS, ONE TOED HORSES, CAVE BEARS, PECCARIES, TAPIRS, DOGS, WOLVES, FOXES, RODENTS
	PLIOCENE	150	GROUND SLOTHS, CAMELS, ONE TOED HORSES, FIRST RUMINANT, FIRST TRUE CAT, PROBOSCIDEANS, RODENTS
		400	MASTODONS, TRUE HORNLESS RHINOCEROSSES, LAST DREDDONTS, CAMELS, THREE TOED HORSES, DEER, FIRST PRONG-HORN ANTELOPES
		150	TRUE HORNLESS RHINOCEROSSES, DREDDONTS, CAMELS, FIRST MASTODONS, FIRST TRUE DEER
	MIOCENE		
AGE OF MAMMALS	JOHN DAY (OREGON, NEVADA)	1000	HORNLESS AND TWIN HORNED RHINOCEROSSES, LAST ELOTHERES, DREDDONTS, PRIMITIVE CAMELS, PRIMITIVE DEER, RODENTS, DOGS, WOLVES, FOXES, ETC., CATS (SABRE-TOOTH TIGERS)
	OLIGOCENE		
	WHITE RIVER (NEV., S. DAK., W. DAK., COL., CANADA)	1000	HYPOSPOTAMIDS, PROTOCERAS, PECCARIES, LAST DREDDONTS, DOGS AND CATS, FIRST HORNED ELOTHERES, CUNYDIAL RHINOCEROSSES, TAPIRS, FIRST THREE TOED HORSES (MESONYX), SWIMMING RHINOCEROSSES (AMYNODONT), LAST TITANOTHERES, DREDDONTS, RHINOCEROSSES, FIRST TRUE HORNLESS RHINOCEROSSES, PRIMITIVE DEER, LAST PRIMATES, RODENTS, INSECTIVORES
	UINTA (UTAH)	800	PRIMITIVE RHINOCEROSSES AND AMYNODONT, TITANOTHERES, ELOTHERES, DREDDONTS, FIRST CAMELS, FIRST DREDDONTS, TAPIRS, FOUR TOED HORSES, PRIMATES, RODENTS, LAST UINTATHERES, DOG-LIKE DREDDONTS, BEARS
	BRIDGER (WYOMING, UTAH)	2000	UINTATHERES, TITANOTHERES (PALAEOTHERIUM, TETRAOTHERIUM), PRIMITIVE RHINOCEROSSES (HYRACHYUS), FIRST ELOTHERES (ACHENODON), LARGE DREDDONTS (MESONYX), CAT-LIKE (PROBOSCIDEANS) AND DOG-LIKE (BEARS) DREDDONTS, FIRST SELENDONT ARTIODACTYLS (HOMACODON), FOUR TOED HORSES (DORCOPUS), LAST PRIMITIVE GROUND SLOTHS, PRIMATES, RODENTS, BATS, LAST TILLODONT
AGE OF MAMMALS	Eocene		
	WIND RIVER (WYOMING)	800	LAST CORYPHODONS, FIRST UINTATHERES, FIRST TITANOTHERES, LAST CONDYLARTHS, FOUR TOED HORSES (PROTODORCOPUS), PRIMATES, DREDDONTS, RODENTS, BATS, TILLODONT
	WASATCH (WYOMING, NEW MEXICO)	2000	AMBLYPODS, CORYPHODON, CONDYLARTHS (PHENACODUS), FIRST FOUR TOED HORSES (HYRACHYUS), FIRST TAPIRS (SYSTEMODON), FIRST ARTIODACTYLS IN OLIVER-HOOFED ANIMALS, PRIMATES (MONKEYS OR LEMURS), DREDDONTS OR PRIMITIVE CARNIVORES, (RESEMBLING CATS, DOGS AND BEARS), FIRST RODENTS, TILLODONT, INSECTIVORES, PRIMITIVE GROUND SLOTHS
	TORREJON (NEW MEXICO)	300	CONDYLARTHS (PHENACODONT) AND AMBLYPODS, DREDDONTS, PRIMITIVE EDENTATES, FIRST PRIMATES, LAST MULTITUBerculata
	PUERCO (NEW MEXICO)	500	CONDYLARTHS OR PRIMITIVE HOOFED MAMMALS, DREDDONTS OR PRIMITIVE CARNIVORES, MULTITUBERULATES, MONOTREMES, PRIMITIVE EDENTATES, GROUND SLOTHS
AGE OF REPTILES			
	LARAMIE	5000	
CRETACEOUS			

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much more nearly known. The estimates given on page 5 are based on the very careful study of the subject made by C. D. Walcott, the present Director of the U. S. Geological Survey. In concluding his discussion Dr. Walcott stated his belief that the duration of geological time (the entire period included in this table) might be measured by tens of millions of years, but not by single millions or by hundreds of millions."

The most ancient of the extinct animals shown here are the creatures of the *Age of Reptiles*, such as the Dinosaurs, or great land reptiles, Mosasaurs, or great marine lizards, Ichthyosaurs, or fish-lizards, and other smaller animals. These are millions of years old. Some of the Dinosaurs are the largest known land



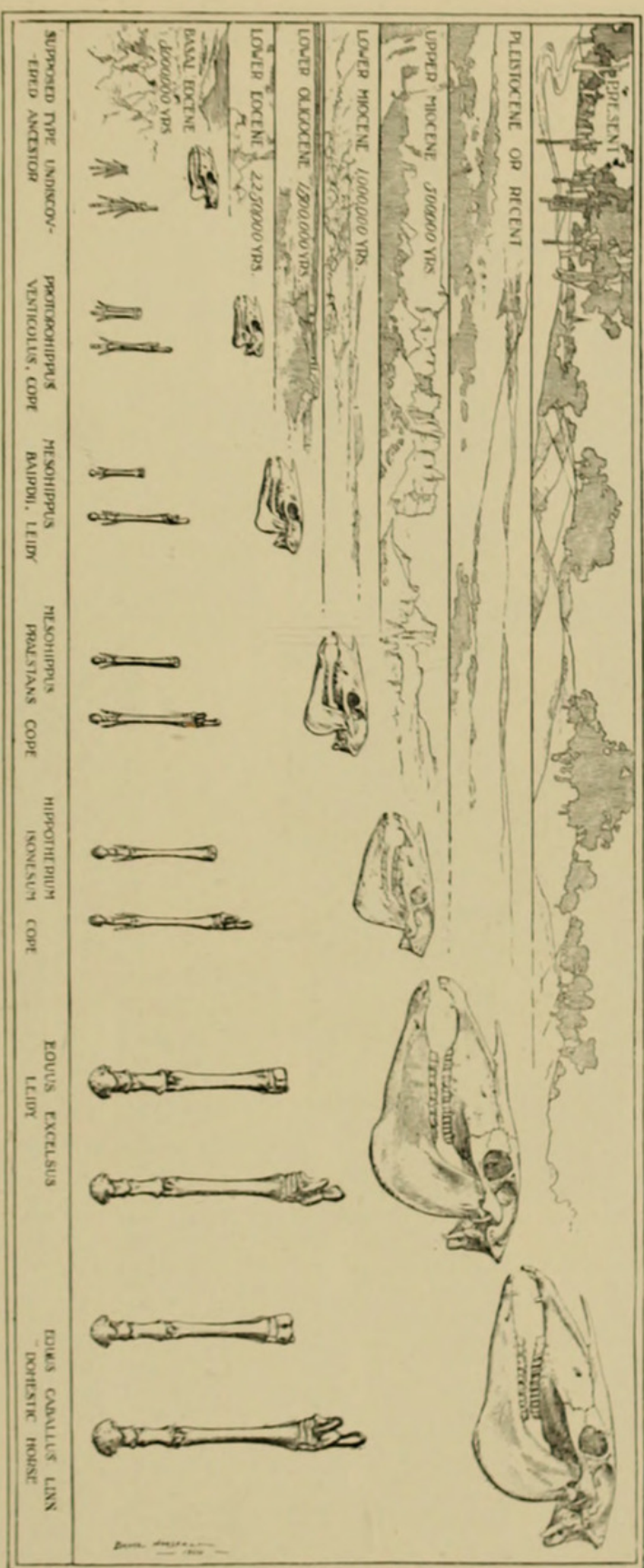
RESTORATION OF TITANOTHERIUM, AN EXTINCT HOOFED MAMMAL OF WESTERN AMERICA

The picture shows a bull, a cow and a calf

From the original watercolor, based on mounted skeleton and skulls in American Museum.

animals, longer than the width of the exhibition hall, and so tall that if they were standing on all fours their backs would reach within a few feet of the ceiling.

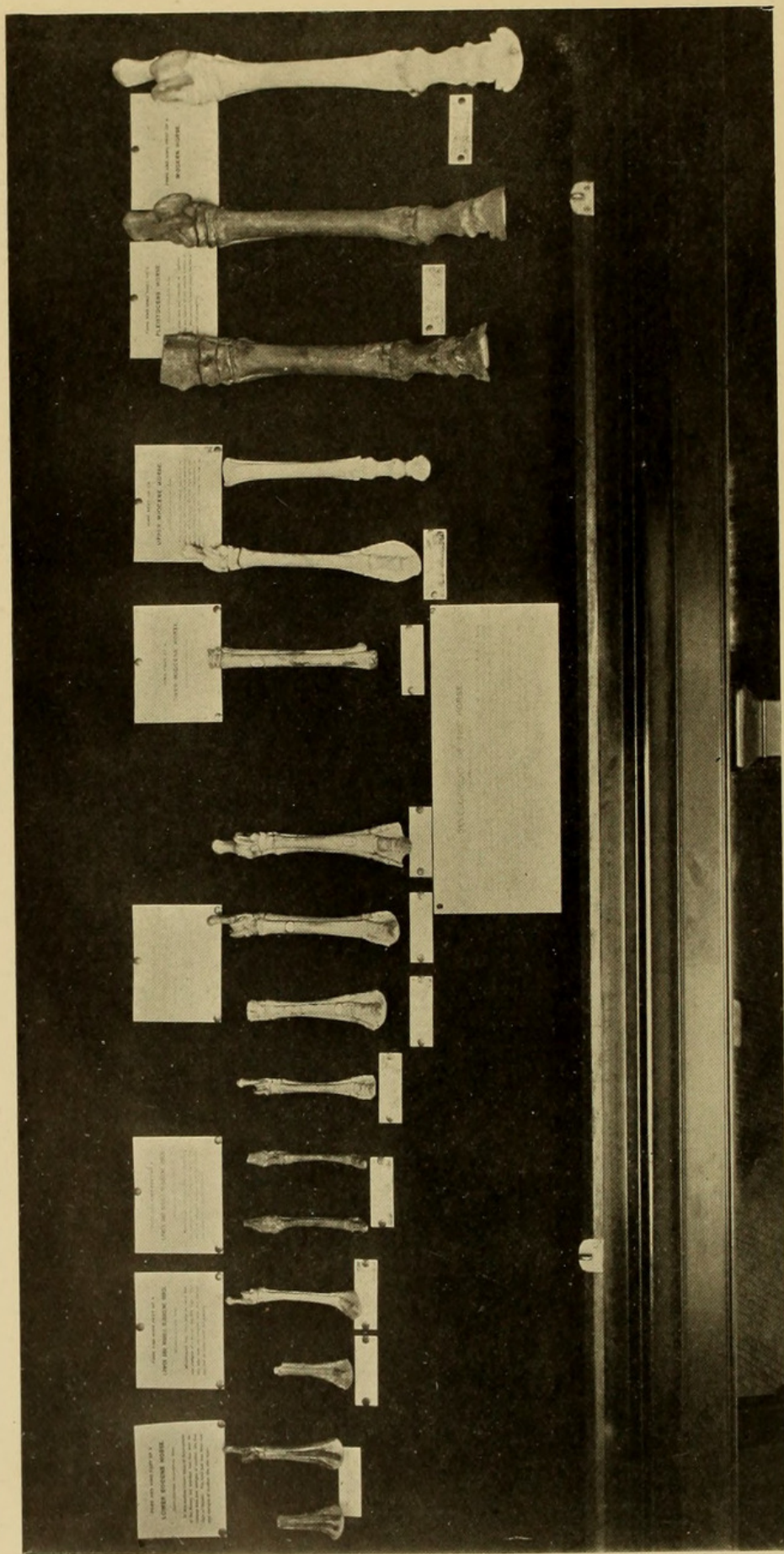
The greater part of the specimens are *Mammals*, or animals



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EVOLUTION OF THE HORSE.—SKULL, FOREFOOT AND HIND FOOT

Stages of progress in the Ancestors of the Modern Horse. The diagram was based entirely on specimens in the American Museum (From "Animals of the Past" by F. A. Lucas. By permission of McClure, Phillips & Co.)



EVOLUTION OF THE HORSE.—FEET

Photograph of the series of fore and hind feet in the American Museum, illustrating the Ancestry of the Horse

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which suckle their young, including most four-footed beasts. Most of them lived during the Tertiary period, or *Age of Mammals*, and are hundreds of thousands of years old, ranging from perhaps three million years down; these lived long before man had appeared on the earth. A few, including the Mastodon, Mammoth, Megatherium, Irish Elk, One-toed Horse and others, are of the latest geological age, the Quaternary, or *Age of Man*, and, while tens of thousands of years old, were contemporaries of the earliest human beings.

Many of the extinct animals are allied to those which are still living and are called by the common names of their modern relatives. Thus we have extinct Horses, Rhinoceroses, Tapirs, Camels etc. Other races have died out completely and are not related to any living animals. *For these there is no popular name*, and we have to coin a name from their Latin or Greek scientific name, calling them "Titanotheres," "Dinosaurs" etc.

INSTANCES OF EVOLUTION.

The best example of the evolution of a race of animals is shown in the southeastern corner of the hall. Here is exhibited the *Ancestry of the Horse*, the specimens from successive geological strata showing how the Modern Horse has descended from diminutive ancestors with four toes on each forefoot and three on each hind foot, and with teeth and other parts of the skeleton different from those of their modern representatives.

Almost equally complete, although less familiar, is the series illustrating the *Ancestry of the Camel*, which may be found on the north side of the hall near the east end. These animals, like the Horses, evolved from small and primitive ancestors to large and highly specialized descendants, and then became extinct in their former home, the broad and arid plains of western America, before the advent of civilized man, but survived to modern times in other parts of the world. Less complete series are the skulls and skeletons illustrating the ancestors of Titanotheres and the ancestors of Rhinoceroses. These are ranged along the south side of the hall beginning at the entrance.

THE HALL OF FOSSIL VERTEBRATES

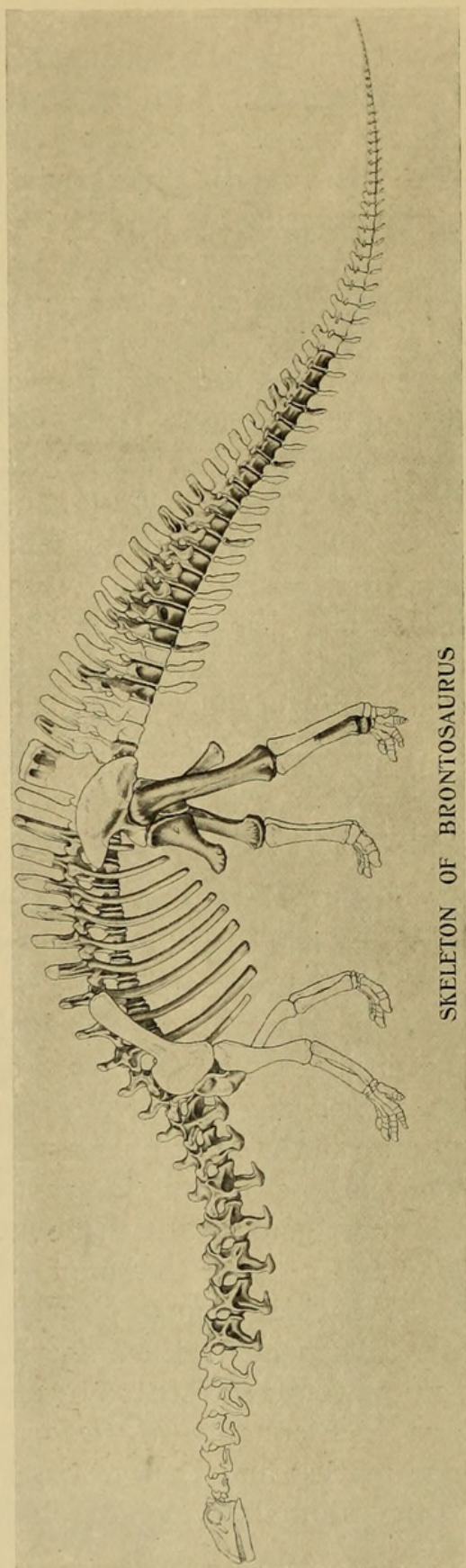
All these series have been placed according to geological age. The most ancient specimens, found in the lowest rock-strata, and hence representing the earliest stage of evolution, are placed first in the series. The most recent ones, found in the uppermost rock-strata, and representing the final stage of evolution of the race, are placed last. Arranging the species of a race from each stratum in the order of the age of the strata, we find that they show a regularly progressive change from the most ancient to the most recent. At no point in a given series can we draw a line and say: This is and that is not, a horse—or a camel—or a rhinoceros. The visitor, therefore, can demonstrate for himself the evolution of the race of Horses or Camels or Rhinoceroses, within certain limits. Of the evolution of Man we have no satisfactory illustration from fossils.

It should be observed that the evolution of a race consists mainly in the adaptation of the structure of the animals to particular surroundings and habits of life. There is also a universal progress in intelligence, the more ancient animals having relatively smaller brains than their successors.

ARRANGEMENT OF THE HALL.

FOSSIL MAMMALS.

On the north side of the hall next the entrance are arranged the Amblypods, ancient hoofed animals long ago extinct, unlike any living animal, although suggesting elephants, rhinoceroses, hippopotami and bears in different parts of the body (skeletons of *Pantolambda* and *Coryphodon*, skulls of *Uintatherium*). Next to them are the Condylarths, the most ancient of Hoofed Mammals, chief among them the *Phenacodus* skeleton, well known to students and figured in most geological text-books as the prototype of the Hoofed Mammals. Next to these are the Carnivora, or flesh-eating mammals, of which four fine skeletons are placed in the large "A"-case. Then come the Insectivora, or insect-eaters, and Rodents, or gnawers, represented by small and incomplete specimens. Then the Elephants (*Mastodon* skeleton, skulls of mastodons and mammoths) and the various kinds of Artiodactyls, or Cloven-hoofed animals, which are allied to modern

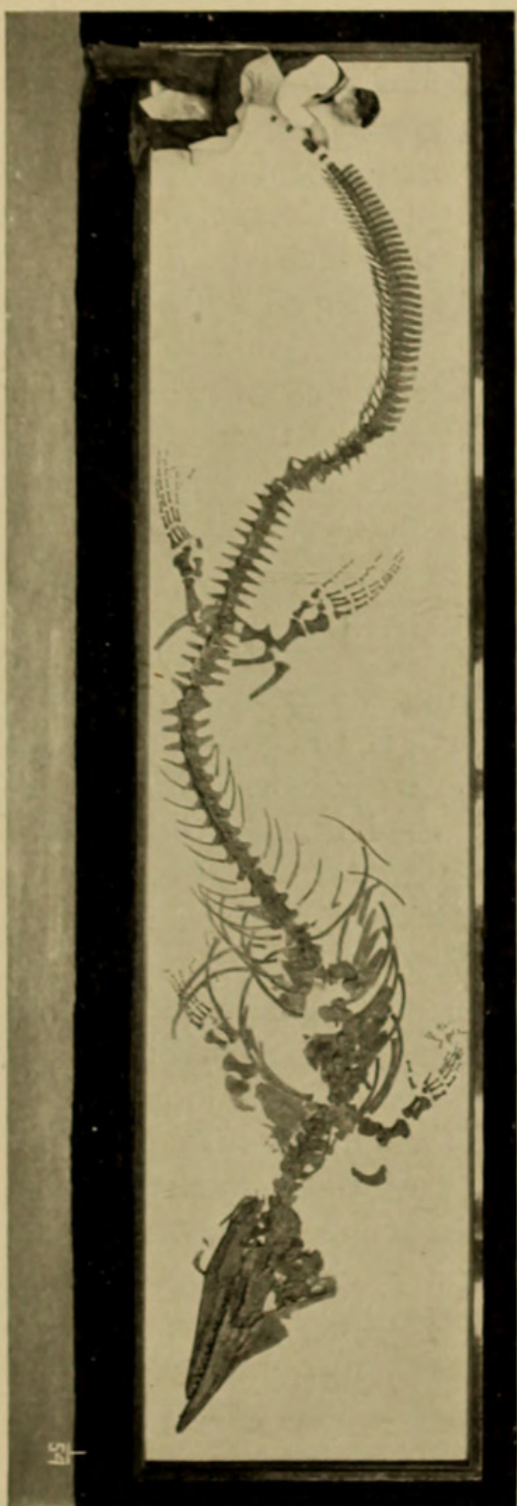


SKELETON OF BRONTOSAURUS

RESTORATION OF THE SKELETON OF A DINOSAUR, OR GIANT REPTILE

$\frac{1}{100}$ Natural Size. Modified from restoration by Prof. O. C. Marsh

The shaded portions represent the bones preserved in specimen No. 460 of the American Museum collection



PHOTOGRAPH OF THE SKELETON OF THE GREAT MARINE LIZARD IN THE AMERICAN MUSEUM

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pigs and peccaries, camels, deer, sheep and cattle. Four skeletons and numerous incomplete specimens represent these last.

The south side of the hall is devoted chiefly to the Perissodactyls or Odd-toed Hoofed Mammals. First come the Titanotheres, an extinct group, once abundant in North America, whose evolution is here illustrated by two skeletons and a series of skulls; then the Rhinoceroses, also abundant in North America in former geological epochs, represented here by six complete skeletons and a large series of skulls; after these the Horses, whose evolution is illustrated by two skeletons and many skulls and feet. At the eastern end of the hall is a cast of the skeleton of the *Megatherium*, or great Ground Sloth, the largest of a singular group of mammals which inhabited South America until the advent of Man in that part of the world.

FOSSIL REPTILES.

The Dinosaurs, or giant reptiles, have been placed temporarily in two wall cases at the east end of the hall, and in the two high cases to the north of the centre aisle. Small models of restorations of three kinds of dinosaur will be found in an "A"-case near the east end of the hall, near the centre aisle.

These were the great terrestrial vertebrates of their day, the *Age of Reptiles*, and they assumed an extraordinary variety of forms, but all had long hind limbs and a long and massive tail. Some of the Sauropods (*e. g.*, *Brontosaurus*, *Diplodocus*, *Morosaurus*), four-footed, long-necked, herbivorous, probably amphibious, were beyond comparison the largest animals that ever trod the earth and can be compared in size only with the modern whales. Incomplete skeletons of these monstrous beasts are shown in this hall. Others, the Megalosaurs, were two-footed, carnivorous, preying on the clumsy giants (Sauropods) with which their remains are found associated in the rock. Others again, the Stegosaur and Ceratopsians, or armored dinosaurs, were short-necked quadrupeds, massively proportioned, with back and tail covered by heavy bony plates and spines. Another group, the Ornithopods or Iguanodonts, long-limbed bipeds—or rather tripeds, for the long and massive tail formed a third support,—

THE HALL OF FOSSIL VERTEBRATES

had broad, flattened, horny bills like some gigantic duck. The knowledge of these strange animals has been gained chiefly from fragmentary specimens and has been hindered not a little by the—to our eyes—strange and inappropriate combinations of form. It is only within the last few years that complete or nearly complete skeletons have been found, and the preparation for exhibition of those possessed by this Museum is not yet finished.



RESTORATION OF THE FOUR-TOED HORSE

Oldest known Ancestor of the Modern Horse; only 16 inches high
Photo from original watercolor by C. R. Knight, based on mounted skeleton in
American Museum

The *Mosasaurs*, or great marine lizards, are represented by the skeleton on the wall of the corridor by the staircase. Three *Ichthyosaur* skeletons are placed on the opposite wall. This corridor will be filled ultimately with specimens of the great marine reptiles of the Mesozoic, or Age of Reptiles, which were in those times the tyrants of the sea, as the contemporary Dinosaurs were the giants of the land.

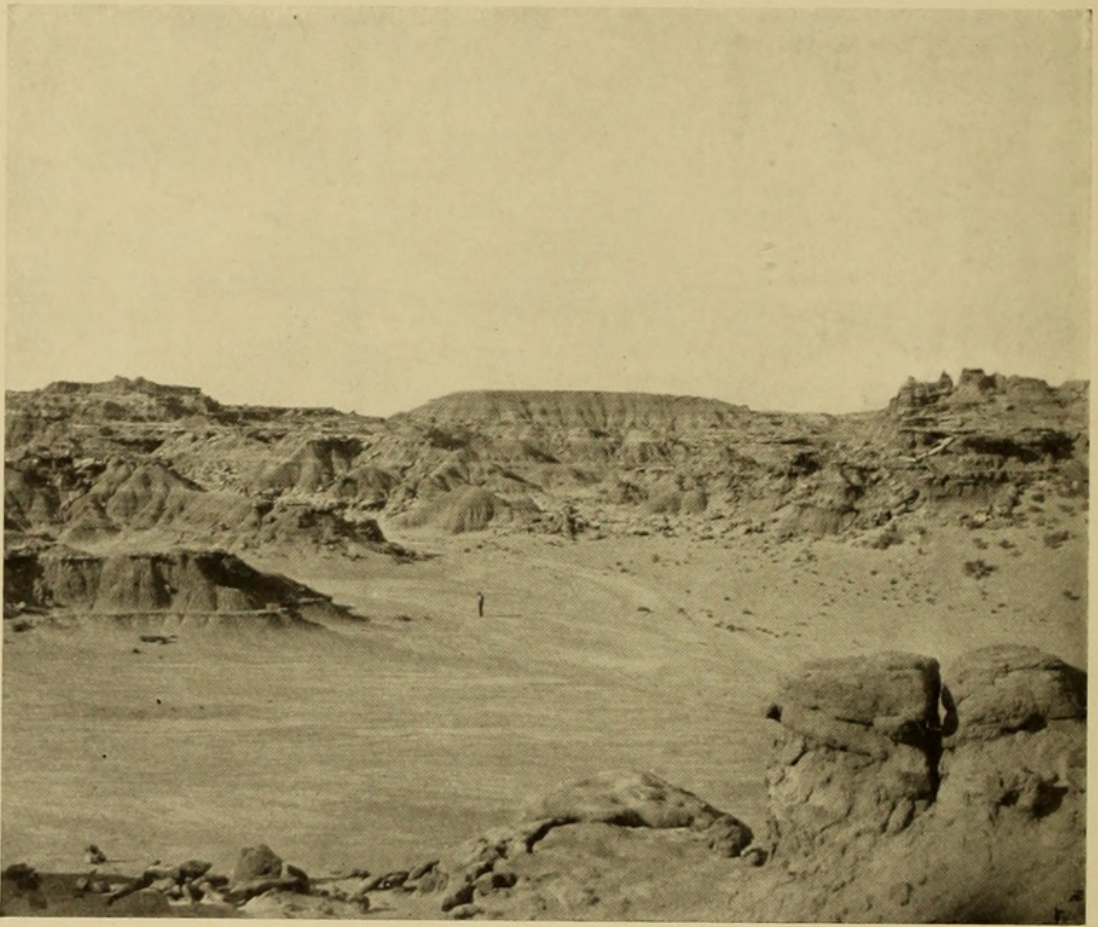
THE HALL OF FOSSIL VERTEBRATES

FOSSIL FISH.

In the corridor above the skeleton of the great Marine Lizard by the staircase will be found the skeleton of a great fish, obtained from the same geological stratum, and remotely allied to the Tarpon of the Florida coast.

ILLUSTRATING THE SPECIMENS.

The Watercolor Restorations by Charles R. Knight, done under the immediate supervision of Prof. Henry F. Osborn, the Curator of this Department, mainly based on complete skeletons



SCENE IN THE BAD LANDS OF THE UINTA BASIN—TERTIARY FOSSIL FIELD OF
NORTHEASTERN UTAH

exhibited in this hall, show the *probable appearance* of the different extinct animals, according to our best judgment, as indicated by the characters of the skeleton, appearance of their nearest sur-

THE HALL OF FOSSIL VERTEBRATES

viving relatives and the habits of life for which the animals seem to have been fitted. The general proportions of the animal, the outlines and form of head and body and, to a great extent, the expression of the features are usually accurately known from the fossil skeleton. The nature of the skin is sometimes but not often certainly known, and the coloring is always conjectural, the palæontologist and the artist having been guided by the coloring of living relatives and the supposed habits of the animal.

The Window Transparencies are enlargements from photographs of the regions where the fossils occur, and generally show the localities where unusually fine specimens in this hall were found. The Expeditions sent out yearly to the Fossil Fields carry with them a photographic outfit, and several hundred characteristic views have been taken, from which these have been selected. The Pillar Cards and general Labels in the cases give detailed information about each group of fossils. One of the cases in the centre of the middle aisle illustrates the method by which the fossils are collected and conveyed to the Museum. The Charts at each side of the entrance show the order in which the rock-strata lie, one over another, and the kinds of fossils found in each stratum.



Matthew, William Diller. 1902. "The Hall of Fossil Vertebrates." *Guide leaflet* 3, Page 1–19.

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