

THE AMERICAN MUSEUM OF NATURAL HISTORY

# THE HALL OF THE AGE OF MAN



By HENRY FAIRFIELD OSBORN

GUIDE LEAFLET SERIES No. 52

THIRD EDITION, REVISED AND ENLARGED

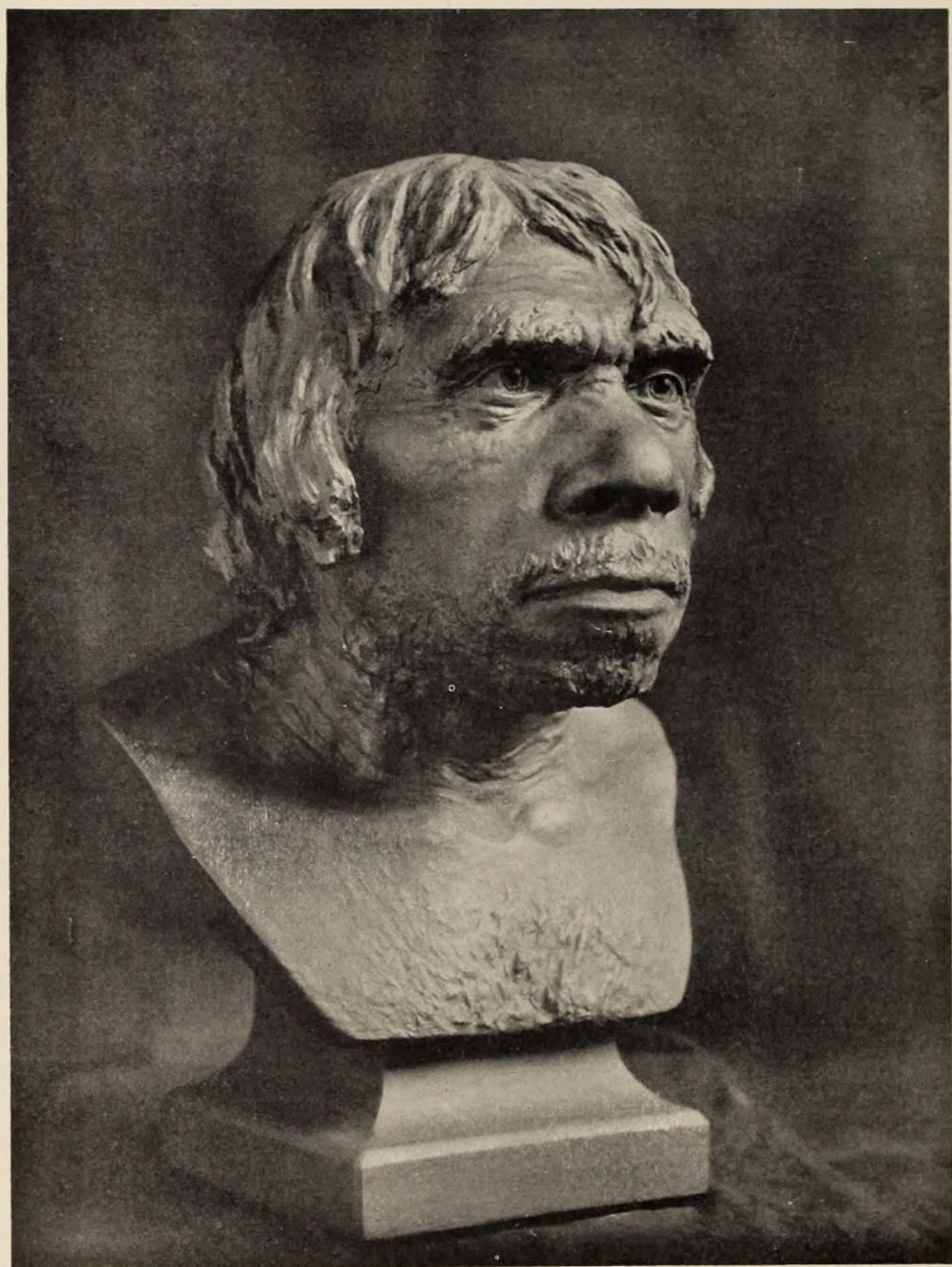
MAY, 1925

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AMERICAN MUSEUM  
NATURAL HISTORY





### NEANDERTHAL MAN

Modeled by Dr. J. H. McGregor on cast of skull found at La Chapelle aux Saints, France, in 1908.



# THE HALL OF THE AGE OF MAN

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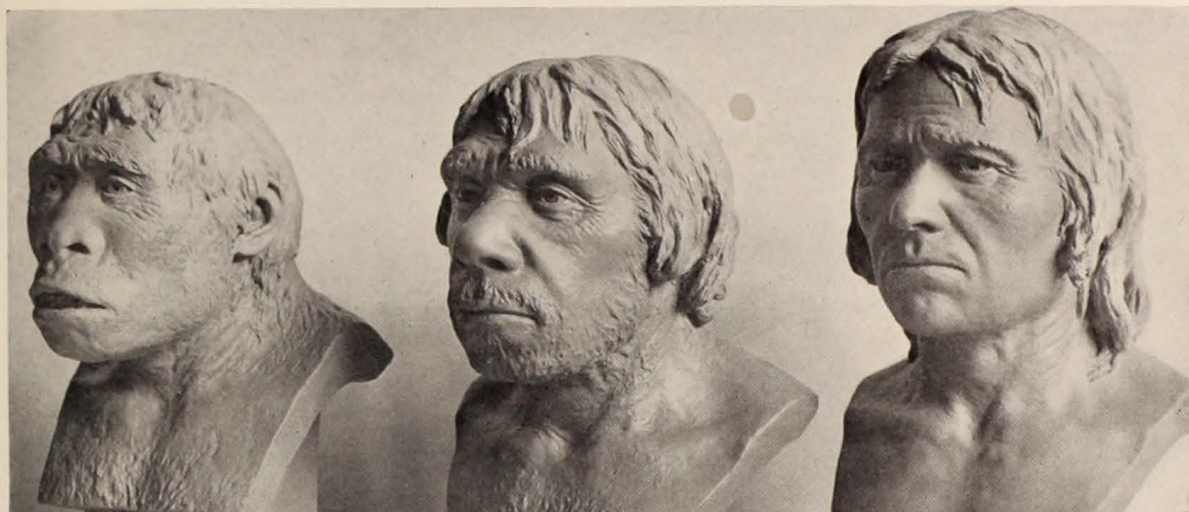
The HALL OF THE AGE OF MAN is designed to show what we know of Man and his environment during the long period of geologic time in which man rose from a condition of limited intelligence and subordination to the Animal World to his present condition of great intelligence and mastery both of the Animal World and of many of the principal forces of Nature.

The exhibit is arranged in an educational manner so as to present very simply, very truthfully, and very clearly, our actual knowledge, and not to confuse the visitor with theories or speculations.

The actual fossil remains of Man are represented by casts which are colored as nearly as possible to duplicate the originals which are to be found only in the great museums of Europe. Great pains have been taken to secure casts of the latest discoveries in various parts of the world. The beginning of this collection was a gift of Dr. J. Leon Williams in 1915, and it is constantly being amplified by gifts from other friends and from museums abroad.

The models and restorations and mural paintings of man and of the great mammals among which he lived and struggled represent the knowledge of more than a century of exploration and anatomical study by the leading students of Comparative Anatomy and Palæontology from the time of Cuvier in 1790 to the present period.





TRINIL APE-MAN  
*Pithecanthropus erectus*

NEANDERTHAL MAN  
*Homo neanderthalensis*

CRÔ-MAGNON MAN  
*Homo sapiens*

Fig. 1. THREE GREAT RACES OF PREHISTORIC MAN.  
Models by Professor J. H. McGregor.

## The Hall of the Age of Man in the American Museum

BY HENRY FAIRFIELD OSBORN

Third edition, revised and enlarged. Edited by William K. Gregory

The exhibits in the Hall of the Age of Man is intended to illustrate what is known of the origin, relationships and early history of man, as deduced from his remains and primitive implements, and also to show the animals by which he was surrounded in the early stages of his existence. These animals are shown not only as mounted skeletons but in a series of large mural paintings portraying them as they appeared in the flesh amid their natural surroundings. These paintings are the result of the study of their fossil remains and their careful comparison with related existing animals, a work to which the author has devoted many years of study. Hence they give an accurate and vivid idea of the animals that were the contemporaries of early races of man in various regions of the world.

A series of cases in the center of the hall are devoted to the story of man, and that it can be compressed into so small a space is an indication of the scarcity of his remains, for here are displayed reproductions of the most notable specimens that have been discovered. It has been necessary to use copies, for the actual specimens are few in number and scattered through many museums in widely separated parts of the world.

THE beginning of the Age of Man, some 500,000 years ago, roughly estimated as the close of the Age of Mammals, marks in reality but the beginning of the close of the Age of Mammals. The extinction of the most superb mammals that the earth has ever produced, during the early stages of human evolution, progressed from natural

causes due directly or indirectly to the Glacial epoch. With the introduction of firearms the destruction has proceeded with increasing rapidity, and today it is going on, by the use of guns and steel traps, at a more rapid rate than ever. By the middle of this century man will be alone amid the ruins of the mammalian world he has destroyed, the period of the Age of Mammals will have entirely closed, and the Age of Man will have reached a numerical climax, from which some statisticians believe it will probably recede, because we are approaching the point of the over-population of the earth in three of the five great continents.

### *Man as a Primate*

A few of the more striking points of anatomical agreement between men and apes are illustrated in the first A case, which shows comparative series of skulls, lower jaws, and teeth.

In this exhibit skulls of the great man apes (at the right in Case I) are placed for comparison with those of some of the known extinct or fossil races of man, each ascending along a line of its own. Copies of the most recent discoveries in various parts of the world are placed in this series; in fact, this entire exhibit is designed to show from time to time our progress in discovery, to present actual evidence in place of theories and speculations, and to show how very limited this evidence is as compared with the abundant evidence in the ancestry, for example, of the horse (shown in the Hall of the Age of Mammals).

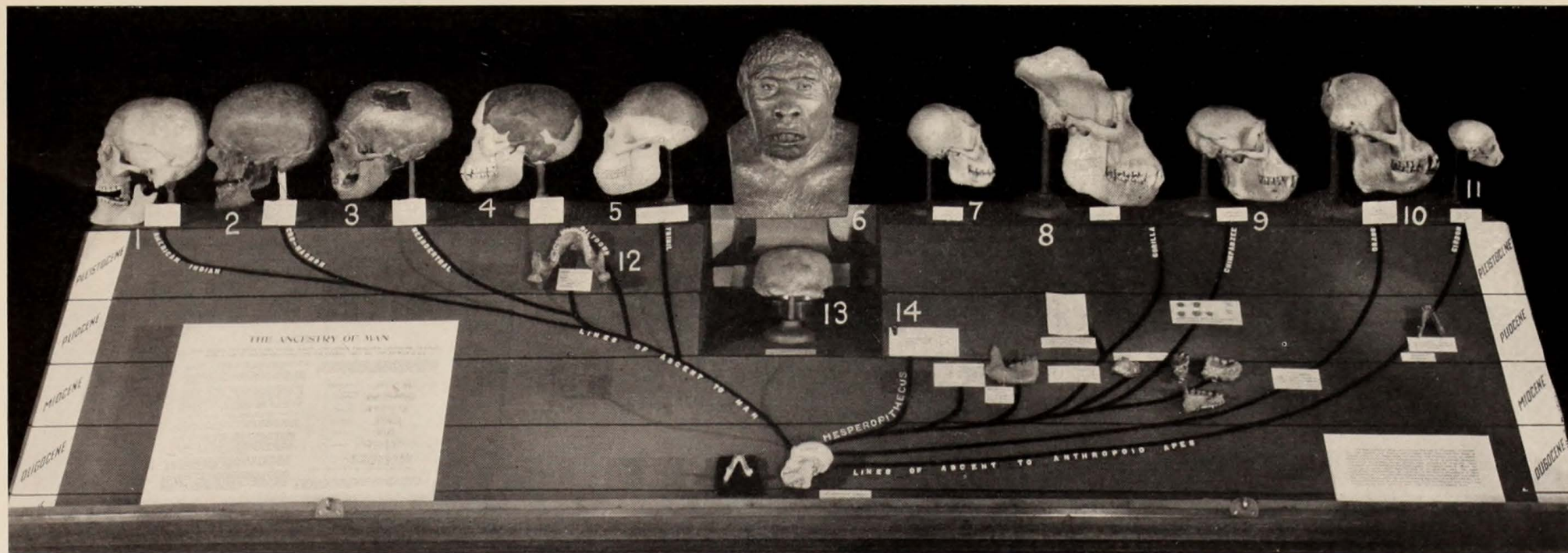
### *The Ascent of Man*

Man has a long line of ancestry of his own, perhaps two million or more years in length. The cradle of the human race was, in our opinion, in Asia, in regions not yet explored by palæontologists. One reason that human and prehuman fossil remains are rare is that the ancestors of man lived partly among the trees and forests; this does not mean that they were arboreal; they lived chiefly on the ground.<sup>1</sup> Even when living in a more open country the ancestors of man were alert to escape the floods and sandstorms which entombed animals like the horse of the open country and of the plains. Hence fossil remains of man as well as of his ancestors are extremely rare until the period of burial began.

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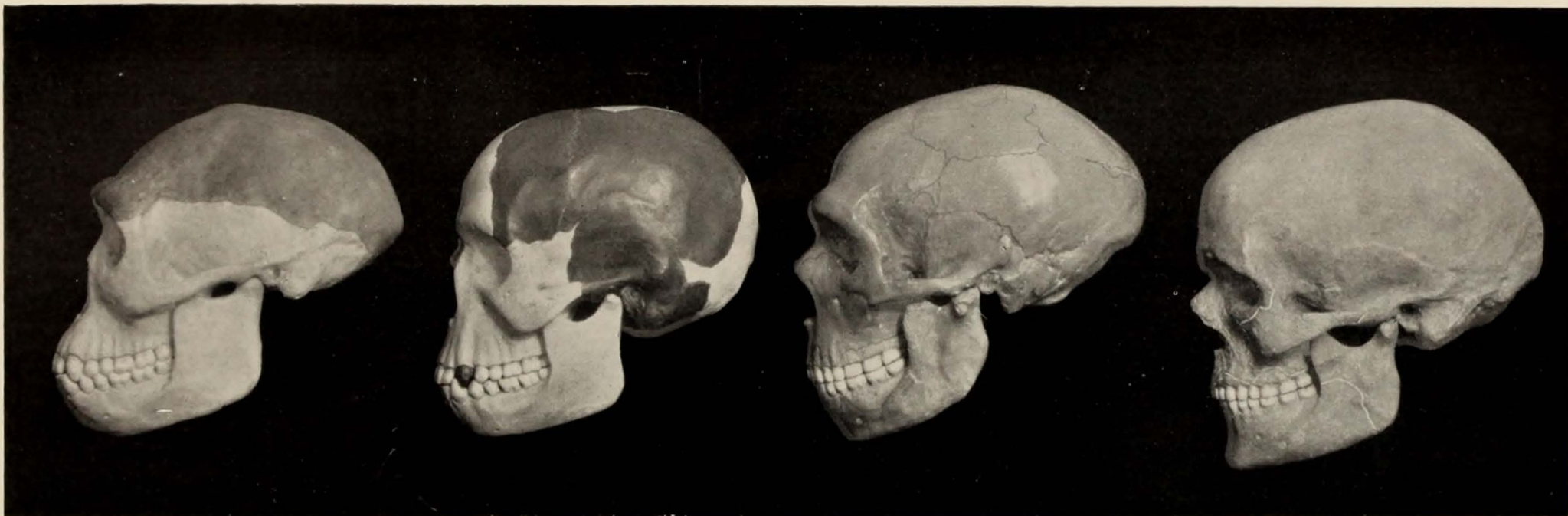
[<sup>1</sup>This refers only to the higher, more recent ancestors of man. The most thorough studies of the anatomy of the foot of man and other primates have brought strong support to the view that the human foot has been derived from an earlier ape-like stage in which the great toe could be used in climbing. W. K. G.]





### MAN'S PLACE AMONG THE PRIMATES

1. Man (existing human type); 2, old man of Crô-Magnon, cast of original; 3, Neanderthal (Chapelle-aux-Saints), cast of original; 4, Piltdown skull (*Eoanthropus*), reconstructed by Dr. McGregor; 5, *Pithecanthropus*, skull reconstructed by Dr. McGregor; 6, model of bust of *Pithecanthropus*, by Dr. McGregor; 7, young gorilla; 8, adult male gorilla; 9, adult male chimpanzee; 10, adult male orang; 11, *Hylobates*, the larger kind of gibbon; 12, cast of jaw found near Heidelberg, Germany; 13, cast of original skull top of *Pithecanthropus*; 14, type upper molar (cast) of *Hesperopithecus*, a fossil ape from Nebraska. The other specimens are casts of various teeth and jaw fragments of fossil apes: *Propithecus* (jaw and reconstructed skull) at the bottom, *Sivapithecus* and several species of *Dryopithecus* and allied genera. The geologic ages (Oligocene, Miocene, etc.) are indicated by the horizontal zones. The black lines indicate relationships as inferred by Dr. W. K. Gregory.



### SKULL MODELS OF FOUR PREHISTORIC HUMAN TYPES

Reconstructions by Professor J. H. McGregor.

Dark parts represented in the original, light parts restored from other specimens.

1. Trinil Ape-Man (*Pithecanthropus erectus*), Upper Pliocene, Java. Showing a very low type of skull, with strong ape-like characteristics.

2. Piltdown Man (*Eoanthropus dawsoni*), Upper Pliocene (?), Sussex, England. Showing a distinctly higher type of skull; nevertheless, the brain cast is far inferior in the development of its parts to that of modern man. The jaw (of which the right side is preserved in the original) is of very low type, more ape-like than any other known human jaw.

3. Neanderthal Man (*Homo neanderthalensis*), Old Stone Age, Europe. The skull is of very large size but of low type, shallow in height, narrow in the frontal region; face very massive with wide nose and sloping chin.

4. Crô-Magnon Man (*Homo sapiens*), Late Old Stone Age, Central France. The skull is of high grade, with steep forehead, high vault and vertically straight face.



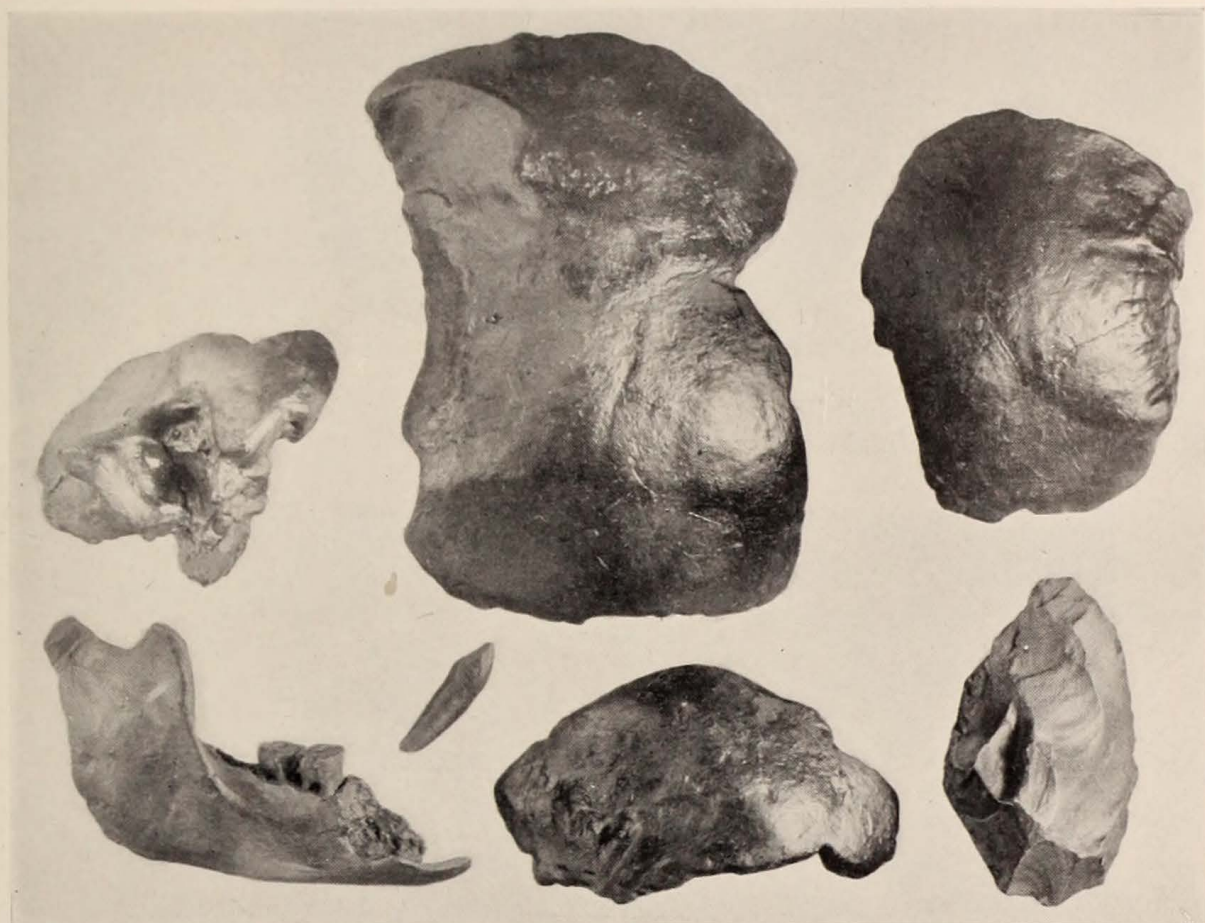


Fig. 2. Skull fragments found by Dawson and Smith Woodward in 1911, 1912; jaw fragment found by Dawson in 1912; canine tooth found by Father Teilhard de Chardin in 1913; nasal bones found by Dawson in 1913; single worked flint found near original skull fragments by Smith Woodward. Jaw one-third natural size; other fragments a bit larger than one-third (distorted somewhat by camera).

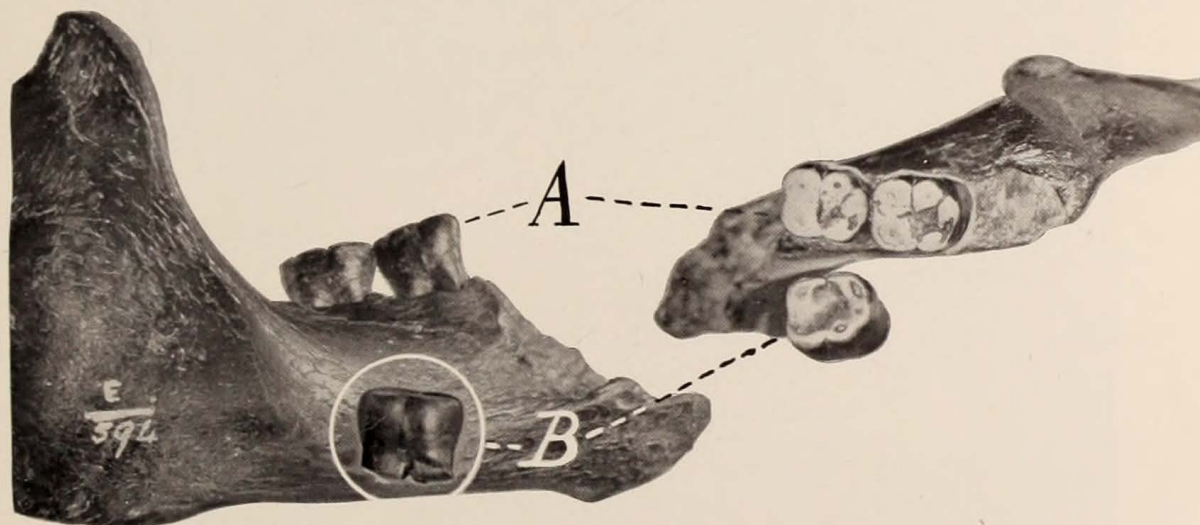


Fig. 3. A, side and top views of jaw of first Piltdown man, with first and second lower molar teeth in place. B, side and top views of first lower molar tooth of second Piltdown man. About three-fourths natural size.

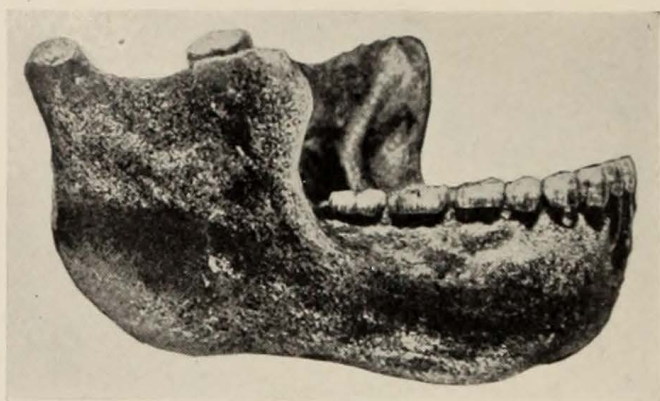


Fig. 4. The "Heidelberg jaw," found at Mauer, near Heidelberg, Germany. About one-third natural size.

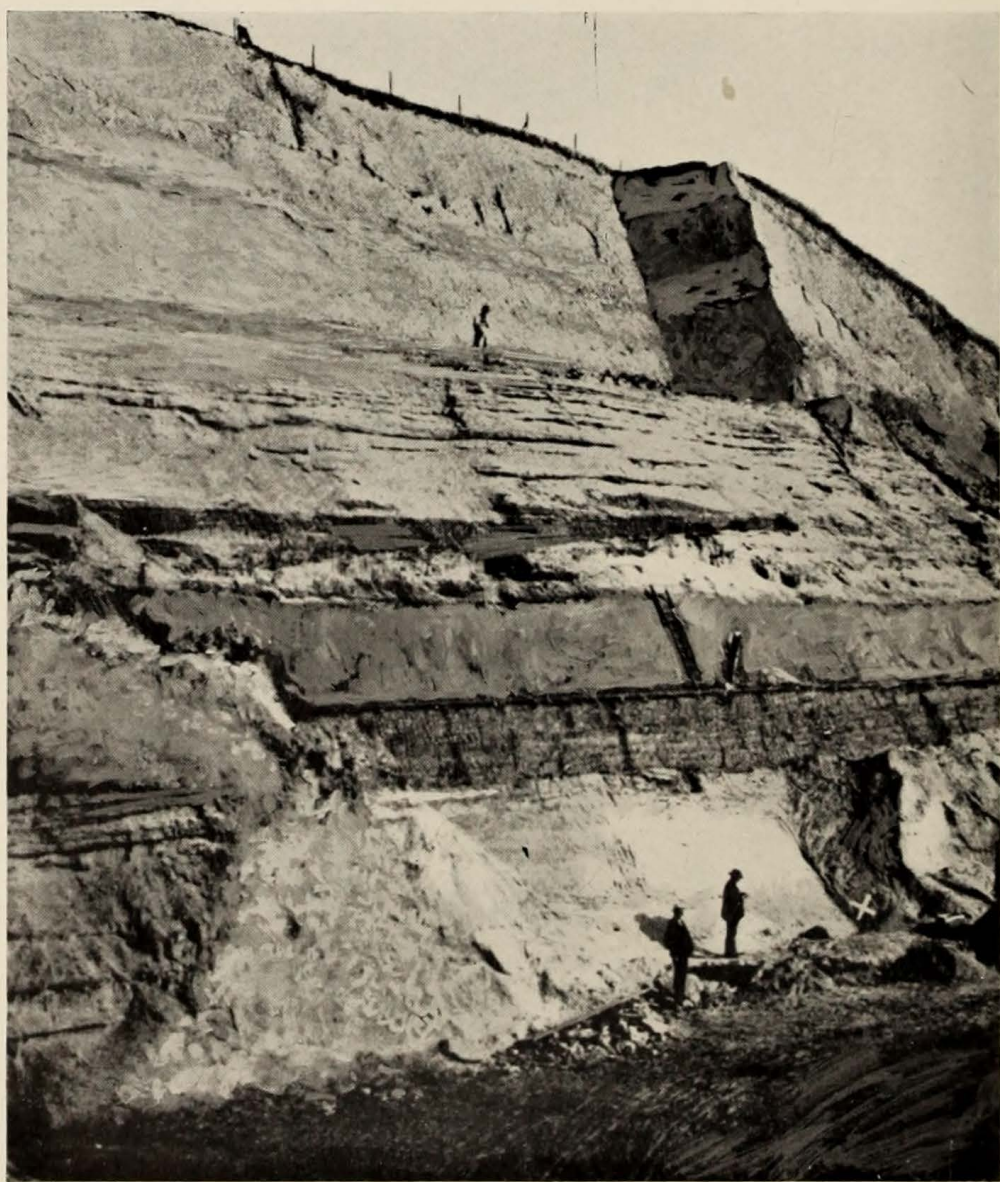


Fig. 5. Sand-pit at Mauer, near Heidelberg. X marks the spot where the jaw was found, in place and beneath 79 feet of glacial and post-glacial deposits.



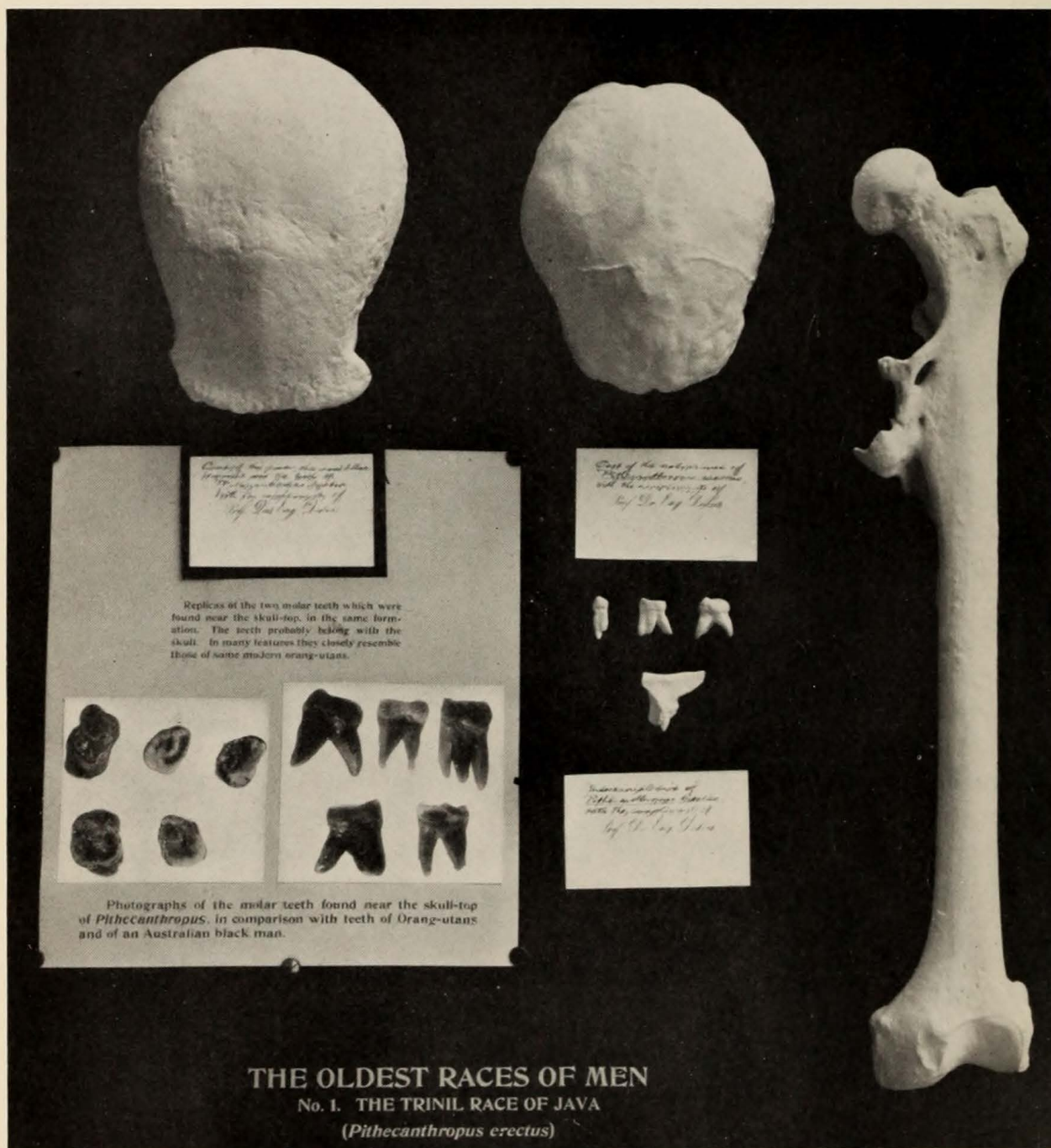
The earliest known human remains of the Trinil, Piltdown and Heidelberg races consist principally of portions of skulls, of jaws, and teeth. Individuals of the prehistoric races of Europe are now represented by casts in the Hall of the Age of Man. The museum series began in 1915 with the gift of the J. Leon Williams Collection, and has been enriched by additions from the museums of London, Paris, and recently by the Neanderthal man of Krapina, presented by Professor K. Gorjanovič-Kramberger, through the kindness of Col. C. W. Furlong; also the Talgai skull from South Australia, presented by Dr. Stewart A. Smith.

The earliest known man is the Foxhall man, known at present only by his flint implements, partly burned with fire, found near the little hamlet of Foxhall, near Norwich, on the east coast of England. These flints, discovered in 1921, constitute the first evidence that man of sufficient intelligence to make a variety of flint implements and to use fire existed in Britain at the close of the *Age of Mammals*; these are the first traces of true Tertiary man ever found.

The Trinil ape-man, the *Pithecanthropus* of Java, is the lowest of the known human or subhuman races. It is called ape-man because it is more human than ape-like. The restored head by Professor J. Howard McGregor, of Columbia University, is designed to show its half human, half anthropoid resemblance, as suggested by the top of the cranium, the only part known, which is far more human than that of any ape cranium, and at the same time far more ape-like than that of any human cranium. It is not impossible that this ape-man is related to the Neanderthal man. The exact geological age of the formation in which the original *Pithecanthropus* remains were discovered has been difficult to settle. The other fossil mammal remains found in the same formation, according to Dubois, Boule and other authorities, were essentially similar to those of the Upper Pliocene age of Europe. On the other hand, according to the geologist Blanckenhorn, the exact relations of the formation to those above and below it indicate a Lower Pleistocene age. In any event the antiquity of the *Pithecanthropus*, in terms of ordinary human experience, is certainly very great, probably not less than 500,000 years.

#### *The Most Ancient Human Races, Piltdown and Heidelberg*

A fragmentary skull, the greater part of the right half of the lower jaw, and an isolated tooth, represent the first found remains of the Piltdown man, discovered in England in 1911-12 by Charles Dawson.



## PITHECANTHROPUS; THE APE-MAN OF JAVA

Skull top, cast of endo-cranial cavity, femur and teeth (casts). The labels are in the handwriting of Dr. Dubois, the discoverer of this remarkable specimen by whom these casts were presented.



Several reconstructions of the Piltdown skull have been made, the first being that by Professor A. Smith Woodward, now in the British Museum. Another was made in this country, by Professor J. H. McGregor.

The problem whether the Piltdown jaw belongs to this human skull or whether it belongs to a fossil chimpanzee is now considered settled, because a *second* specimen of the Piltdown man has been found two miles from the first in the same Piltdown gravels; this specimen has the same kind of lower grinding teeth and the same form in the bone of the forehead. The skull itself is of a primitive human type, the brain cast showing a lowly development of the higher cerebral association centers (Elliot Smith, 1922).

In the deposit that contained the Piltdown remains were found some flint implements of Chellean type and two lots of fossil mammal remains, mostly teeth. The first lot were badly waterworn and had probably been washed out of an older deposit and then redeposited. The second lot, like the human bones, were not waterworn, and are believed by many geologists to be of the same age as the human remains. This lot included teeth of beaver, horse, deer and hippopotamus, animals which have been found elsewhere in Europe in association with flint implements of Chellean type. For these reasons Obermaier and other authorities refer the Piltdown remains to an early phase of the Chellean culture stage of the Lower Palæolithic (Lower Old Stone Age). Its age in the geological time scale may be in either the first or the second Interglacial time of the Pleistocene epoch.

Unquestionably the next most ancient human relic which has thus far been discovered is the jaw of the so-called Heidelberg man, a fossil which may be 250,000 years old. It is notable for its great size and for its lack of a protruding bony chin. The Heidelberg man may be ancestral to the Neanderthal man.

### *The Neanderthal Race*

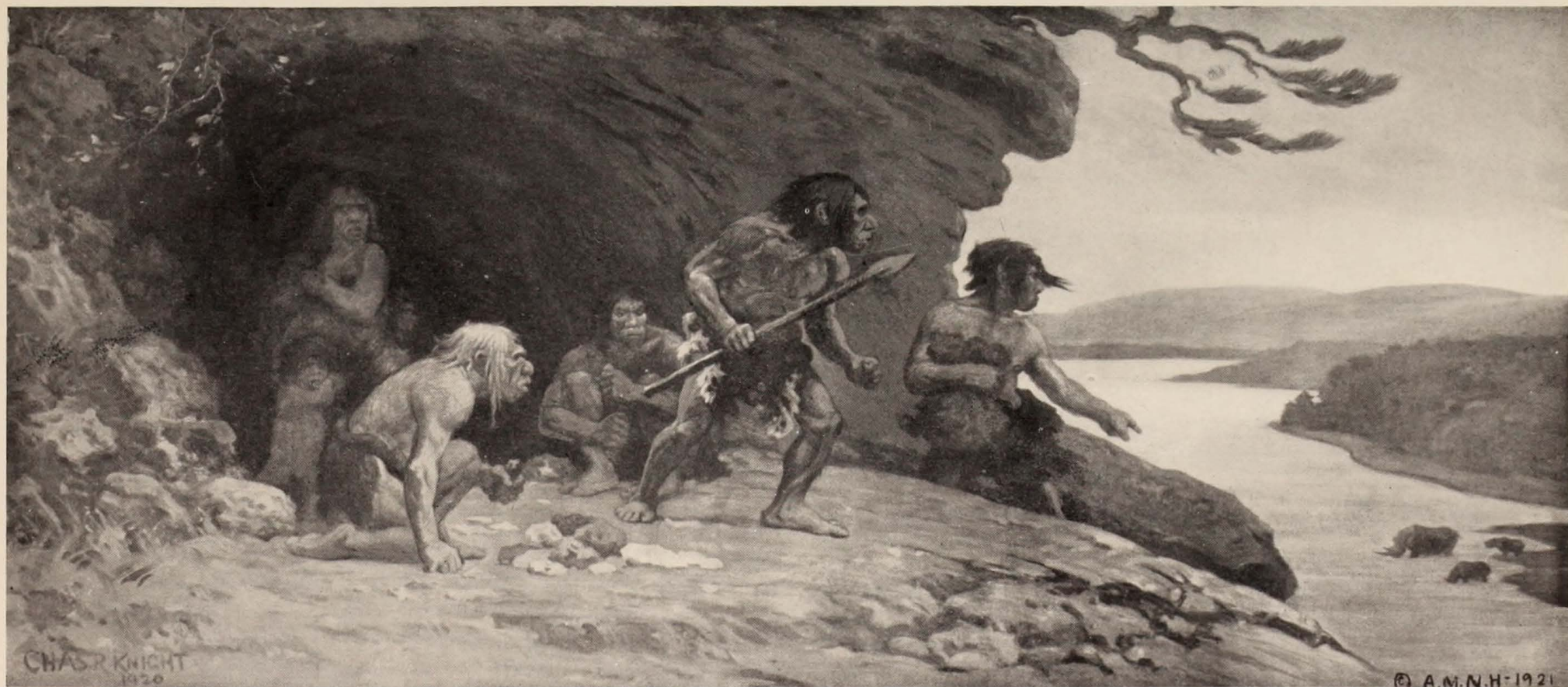
The Neanderthal man represents the oldest fossil human race of which the skeleton is fully known. The remains are very abundant, and the American Museum owns reproductions of many skulls and parts of skulls found during the last half century in Spain, Germany, France, and Hungary. Foremost of these is the skullcap found near Düsseldorf, Germany, in 1856, which constitutes the type of the Neanderthal race itself.



#### NEANDERTHALOID RACES OF THE LOWER OLD STONE AGE

1. Cast of the skull top of the type specimen, discovered in the Neander Valley, near Dusseldorf, Germany.
2. Cast of skull top from Spy, Belgium.
3. Cast of skull top and jaw from Spy, Belgium.
4. Reconstructed skull from La Chapelle aux Saints, France.
5. Bust, by Dr. J. H. McGregor, based on skull from La Chapelle aux Saints, France.
6. Half head, half skull model, by J. H. McGregor, based on skull from La Chapelle aux Saints, France.
7. Cast of skull found at La Chapelle aux Saints, France.
8. Reconstruction of skull found at La Quina, Charante, France.
9. Cast of La Quina skull and skeletal fragments as found.
10. Cast of skull found at Le Moustier, France.
11. Casts of teeth found at St. Brelade, Isle of Jersey.
12. Casts of lower jaw from Malarnaud, France, and of lower jaw from La Naulette, France.
13. Mousterian Flint Implements.





THE NEANDERTHAL FLINT WORKERS

*Painted by Charles R. Knight under the direction of  
Henry Fairfield Osborn. Copyrighted photograph*



Of great interest is the reconstruction by Professor McGregor of a Neanderthal female head, based upon a skull found at Gibraltar in 1848, which gives us the head characters of the women of this very primitive race.

Nearly perfect is the skull from La Chapelle-aux-Saints, originally restored by Professor Marcellin Boule, of Paris, and reconstructed by Professor McGregor; this distinguished American expert in the anatomy of palæolithic man is now engaged upon the reconstruction of the entire skeleton and body of the Neanderthal man. This life-sized Neanderthal model will be one of the most interesting exhibits in the American Museum; it represents many years of laborious study and research by Professor McGregor, who was sent by the Museum on a special tour through Europe to examine all the known fossil remains of the Neanderthal race, representing forty or fifty individuals altogether, including the last specimen to be found, that of La Ferrassie, France, which is now being described by Dr. Boule.

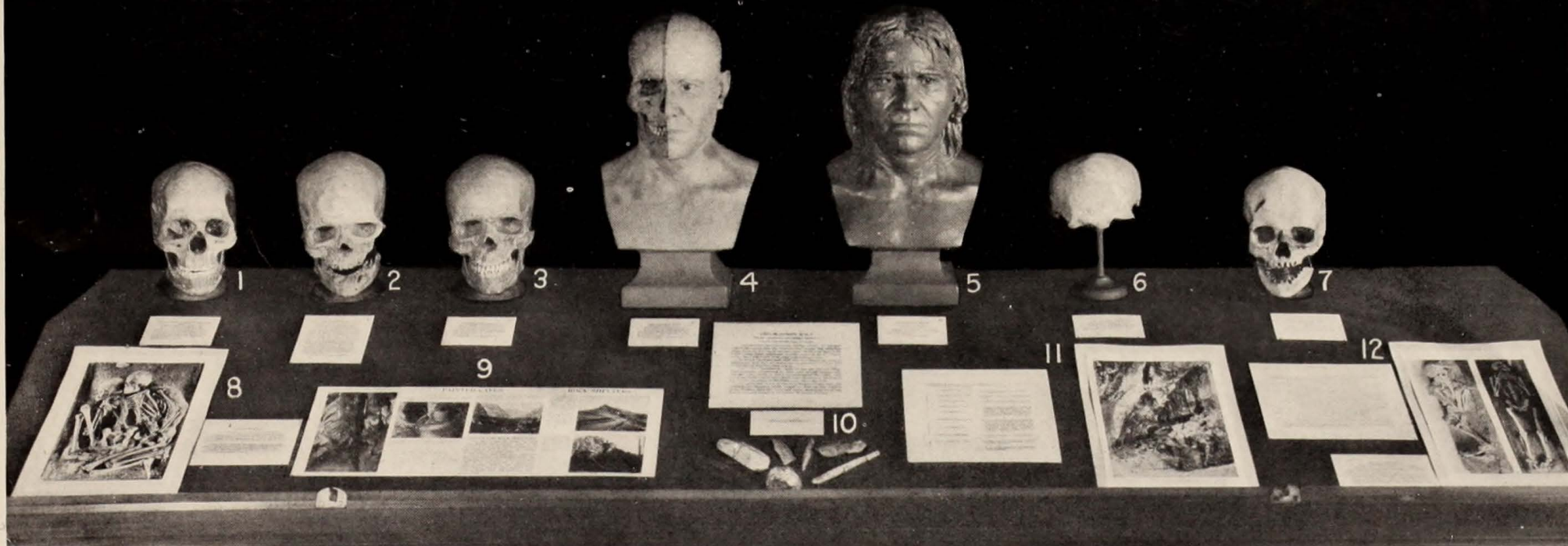
#### *The Rhodesian Race*

The most recent discovery is the Rhodesian man, *Homo rhodesiensis*, made in 1921, in a cave at the Broken Hill Mine, northern Rhodesia, Africa, where the human remains were found in association both with stone and bone implements, and with broken bones of animals which had evidently been used as food. This man was in the Stone Age of industry, using scrapers and knives of quartz and quartzite. The forehead is very low and the ridges above the orbit are excessively prominent; the opening for the nose was very wide, but the palate and teeth are like those in existing races. The brain is of a very low human type of the capacity of 1,280 c.c. (see Smith Woodward's *Guide*, pp. 29-31).

#### *The Neanderthal Flint Workers*

The mural of the Neanderthal group of flint workers shows in the distance, along the Dordogne River, herds of woolly rhinoceroses. The center of interest is the flint industry, which, with the chase, occupied the entire energy of the Neanderthals. Since the Neanderthal type is totally different from any modern human type, it must be studied from models of its own. The group is very carefully arranged to show the physical characters of this man: the knees slightly bent in the peculiar standing posture, the broad, heavy shoulders, slightly stooped, and the massive neck and the head set well forward. In the background is the famous cavern of Le Moustier, which gives its name to the Mousterian period of flint industry pursued by the Neanderthals.





### TYPICAL CRÔ-MAGNON RACES UPPER OLD STONE AGE

1. Combe-Capelle (cast) found near Montferrand, France.
2. Skull (cast) of type specimen, one of five individuals found at Les Eyzies, Dordogne, France.
3. Skull (cast) of type specimen, with teeth and some missing parts restored from study of other skulls of this race.
4. Skull of type specimen, with flesh added on one side, to show the general form of the head.
5. Completed bust, by Dr. J. H. McGregor, modeled on the type skull.
6. Skull top (cast) found with type specimen of Les Eyzies.
7. Skull of female (cast) found at Les Eyzies, France.
8. Photograph of skeletons of the Grimaldi Race, found near Mentone, France.
9. Painted caves, and rock shelters of Men of the Old Stone Age in France.
10. Aurignacian Implements.
11. Grotto du Prince.
12. Photograph of Crô-Magnon skeletons found near Mentone, France.





*Painted by Charles R. Knight under the direction of  
Henry Fairfield Osborn. Copyrighted photograph.*

CRÔ-MAGNON ARTISTS PAINTING THE MAMMOTH



*The Crô-Magnon Race of High Type*

The highly evolved Crô-Magnon race entered Europe from the east and drove out the Neanderthals. The Crô-Magnons were people like ourselves in point of evolution, and the characters of the head and cranium reflect their moral and spiritual potentiality. This was a race of warriors, of hunters, of painters and sculptors far superior to any of their predecessors. The contrast between the Crô-Magnon head and those of the Neanderthals which precede them is as wide as it possibly could be. It is intellectual and thoughtful.

Although these people lived at the very close of the long glacial period, they are far older than the Egyptian and Assyrian civilizations, which we ordinarily think of as being of the utmost antiquity.

*Crô-Magnon Artists Painting the Mammoth*

One of the recent murals in the Hall of the Age of Man (over the doorway opposite the Crô-Magnon exhibit) represents four of the Crô-Magnon artists actually painting the great fresco in the cave of Font-de-Gaume, Dordogne, France. The writer has been studying the composition of this group for years, with Mr. Charles R. Knight, artist, aided by advice of the Abbé Henri Breuil of the Institut de Paléontologie Humaine, Paris, as well as of Mr. N. C. Nelson, archæologist at the American Museum of Natural History.

There are six figures in the group; four are depicted partly nude to show their anatomy in contrast with that of the Neanderthals. The two half-kneeling figures are holding up small lamps to illuminate the smooth surface of the limestone wall on which the procession of mammoths is being depicted. The half-erect figure represents an artist with pointed flint incising the outlines of a mammoth on the wall. The fully erect central figure represents an artist laying on the colors. A kneeling figure is preparing the colors on a rock. This design enables the painter to show the tall, slender proportions of the men of this Crô-Magnon race. The standing figure to the left is that of a chieftain clothed in well-made fur garments, who carries on top of his staff his *baton de commandement* as the insignia of his rank. The only illumination is that of the flickering wicks in the small oil lamps.

*Contrast Between the Old Stone Age (Palæolithic) and the New Stone Age (Neolithic)*

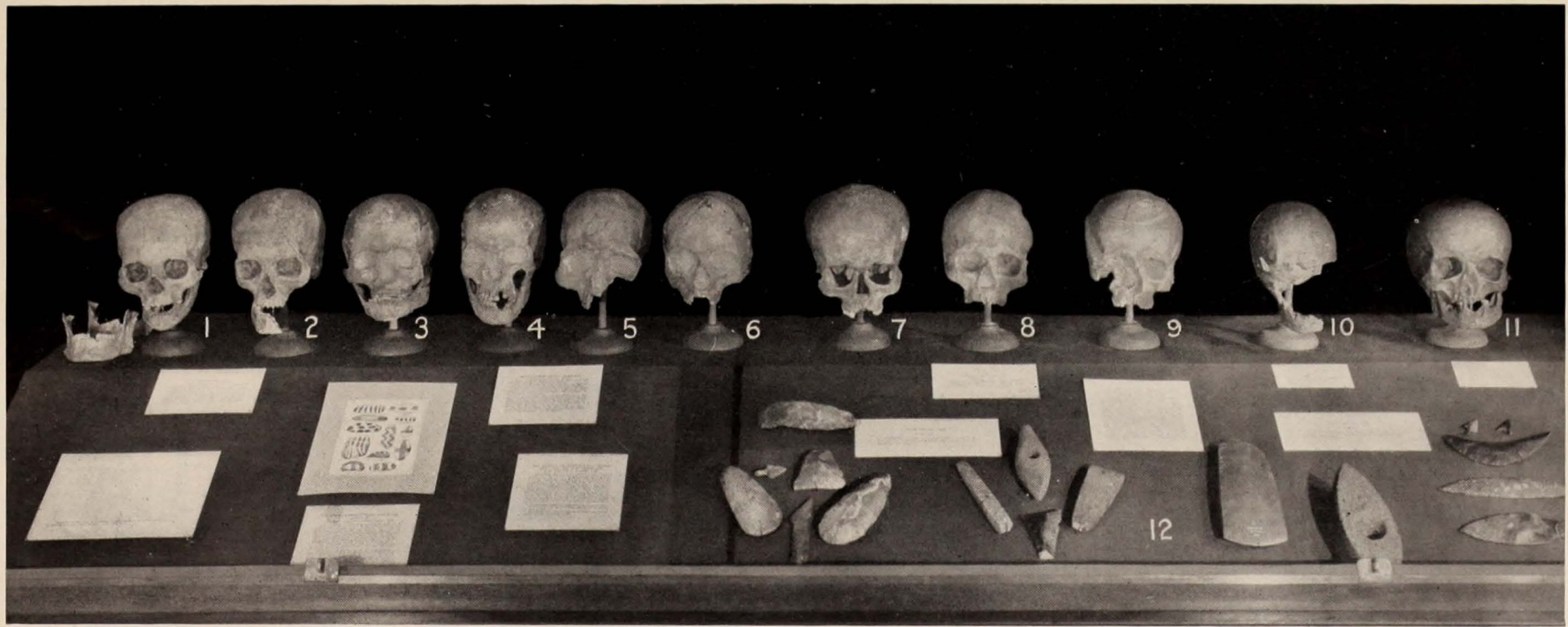
The men of the Old Stone Age lived in Europe during the immensely long periods when the great glacial ice-sheets gradually extended from the mountains out into the open regions, and then as slowly drew back



### CRÔ-MAGNON AND ALLIED UPPER OLD STONE AGE RACES

1. Cast of skull found at Langwith cave, Derbyshire, England.
2. Cast of skull found at Brünn, Moravia.
- 3, 4. Casts of skulls found at Predmost, Czechoslovakia.
- 5, 6. Casts of skulls of man and woman found at Obercassel, near Bonn, Germany.
7. Solutrean implements.
8. Cast of ivory statuette of mammoth, made by "Predmost mammoth hunters."
9. Crô-Magnon cave drawings.
- 10, 11. Magdalenian implements.
12. The Mammoth, engraved on a piece of mammoth tusk (cast).





#### UPPER MAGDALENIAN, AZILIAN, TARDENOISIAN

- 1, 2. Casts of skulls found in a burial grotto of Furfooz, near Namur, Belgium. Upper Magdalenian.  
 3-6. Casts of skulls from a grotto at Ofnet, near the Danube, Germany. Azilian.

#### MEN OF THE NEW STONE AGE (Neolithic)

- 7-9. Casts of skulls from Sclaigheaux, in the valley of the Meuse, Belgium.  
 10. Cast of skull found at Galley Hill, England.  
 11. Broadheaded Alpine type.  
 12. Neolithic implements.

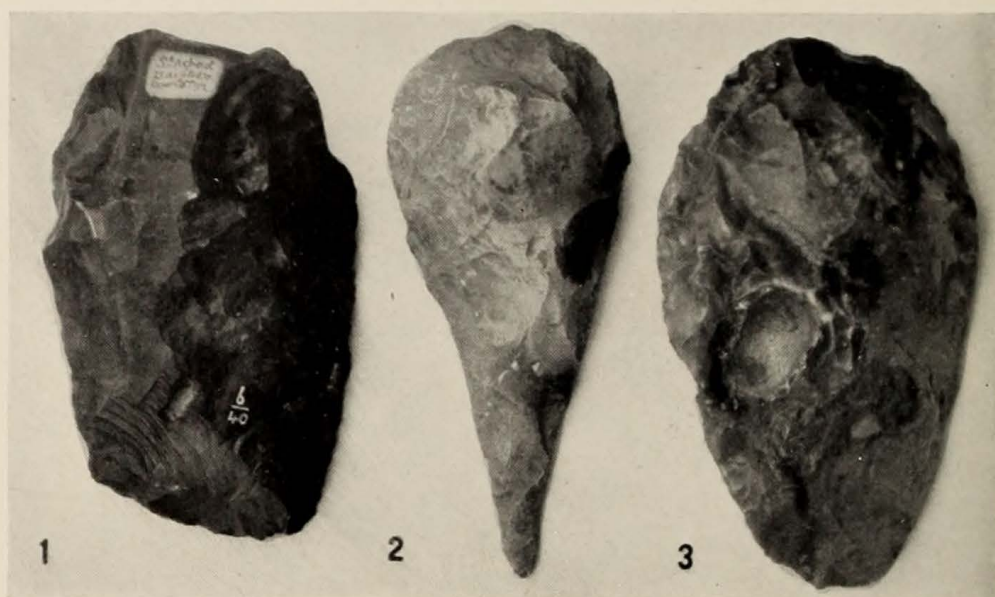
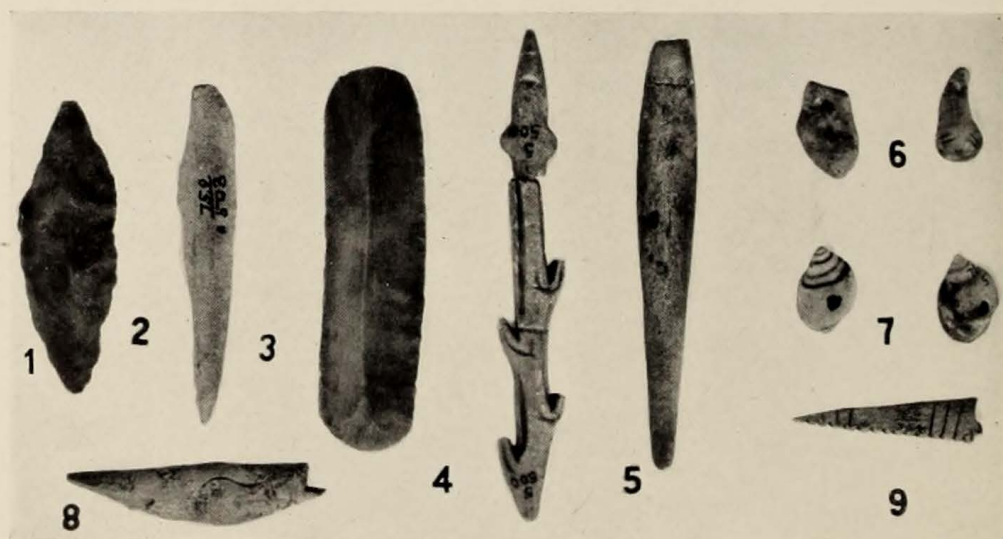


Fig. 6. The progress of primitive man as shown by his tools and weapons.

A. IMPLEMENTS TYPICAL OF THE EARLY PALEOLITHIC AGE

1. Hand-ax or chopping tool of flint.
2. Dagger or perforating tool of flint.
3. Implement of flint for various purposes, such as cutting and scraping.



B. IMPLEMENTS AND ORNAMENTS TYPICAL OF THE LATE PALEOLITHIC AGE

1. Knife blade or spear point of flint.
2. Knife or etching tool of flint.
3. End scraper or planing tool of flint.
4. Harpoon point of bone.
5. Lance point of bone.
6. Beads or pendants of elk teeth.
7. Beads of univalve shells.
8. Fragment of bone with partial outline of a horse etched upon it.
9. Fragment of bone with traces of geometric ornamentation.



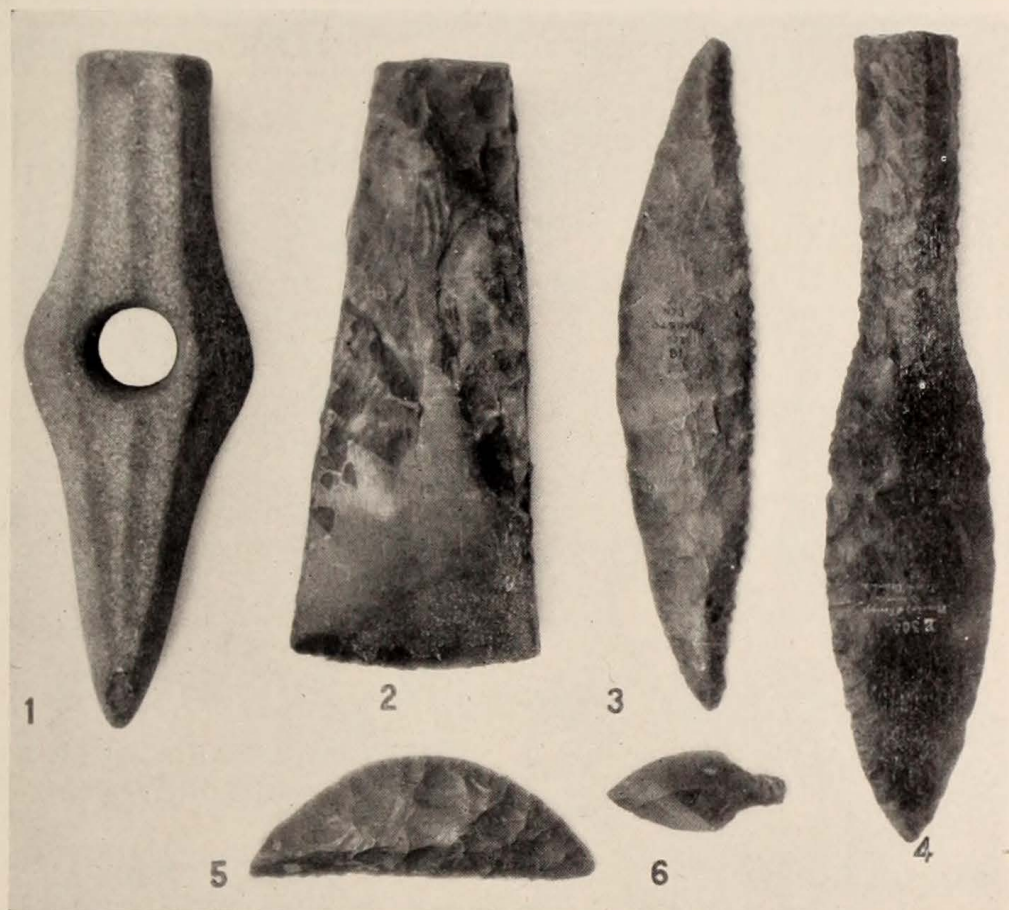


Fig. 7. The progress of primitive man as shown by his tools and weapons (continued).

#### IMPLEMENTS TYPICAL OF THE NEOLITHIC AGE

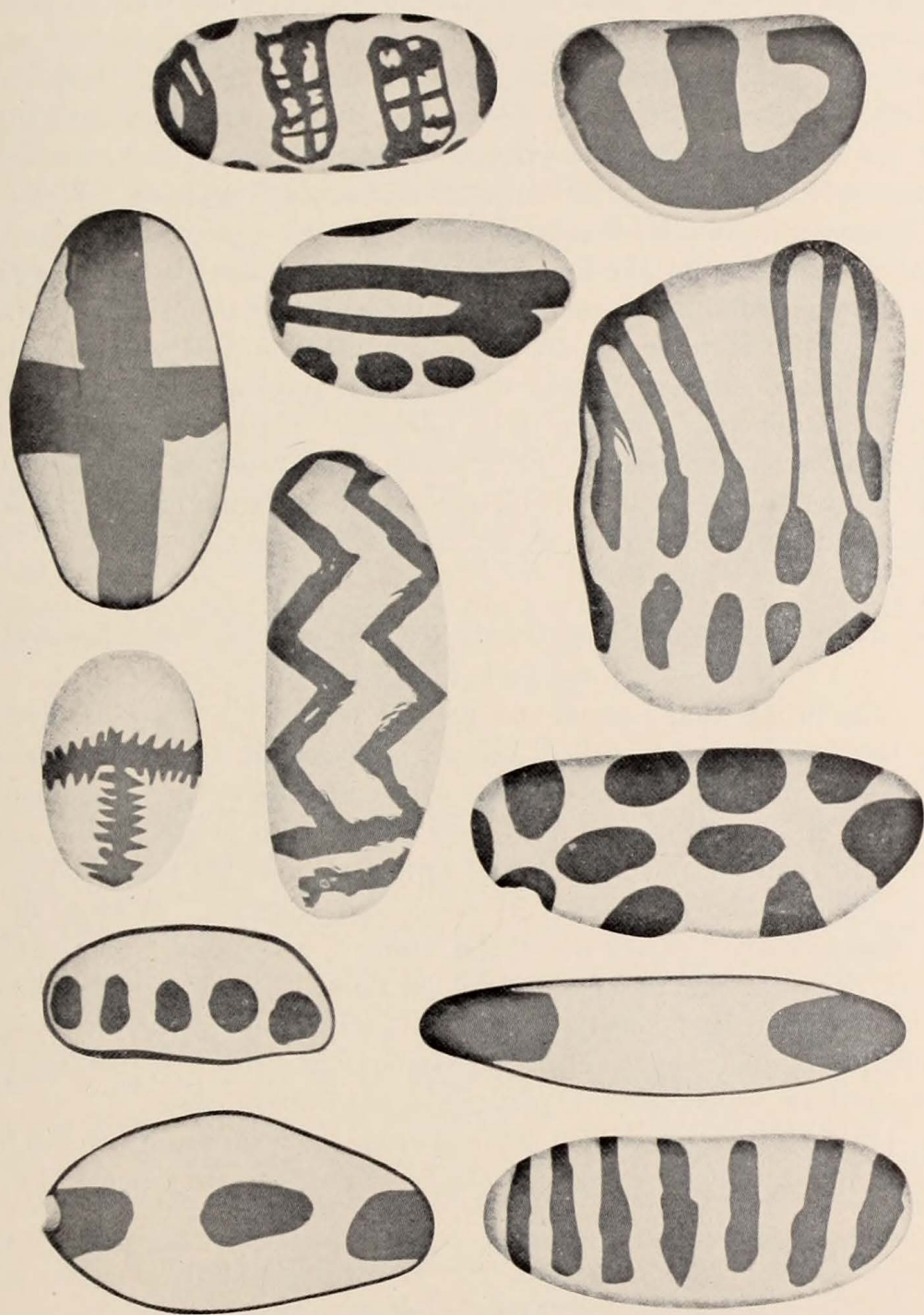
1. Ax-hammer of stone, perforated for hafting.
2. Ax of flint, partly polished.
3. Saw of flint, one edge notched.
4. Dagger of flint, probably in imitation of metallic form.
5. Knife or sickle blade of flint.
6. Arrow point of flint, also made in larger sizes and used as spear points.

STONE CULTURES		HUMAN RACES	CONTEMPORARY MAMMALS
HISTORICAL		PERIOD	EXISTING MAMMALS
NEOLITHIC		PERIOD	MASTODON(?)MAMMOTH
AZILIAN MAGDALENIAN SOLUTRIAN  AURIGNACIAN  COLD MOUSTERIAN  WARM MOUSTERIAN  COLD ACHEULEAN  WARM ACHEULEAN  LATE CHELLEAN  CHELLEAN  EARLY CHELLEAN   CROMERIAN	PALEOLITHIC	GRENELLE CRÔ-MAGNON	
		GRIMALDI	REINDEER MAMMOTH WOOLLY RHINOCEROS
		NEANDERTHAL	ELEPHAS ANTIQUUS HIPPOPOTAMUS
		KRAPINA	ELEPHAS ANTIQUUS HIPPOPOTAMUS
		EHRINGS DORF	ELEPHAS ANTIQUUS RHINOCEROS ETRUSCUS HIPPOPOTAMUS SABRE-TOOTH
		HEIDELBERG	ELEPHAS PRIMIGENIUS MUSKOX REINDEER
		PILTDOWN?	
FOXHALLIAN			

Fig. 8. Sequence of Old Stone Age (Paleolithic) in Europe.

The order in which the races of primitive men appeared in Europe and the most striking mammals living at the same time.





COLORED PEBBLES FROM MAS D'AZIL. FRANCE  
(From Obermaier's *Fossil Man in Spain*)

before the increasing heat of the summer seasons. The woolly mammoth, the woolly rhinoceros, the wild horse, and later the reindeer, were abundant, and were hunted by the skilled makers of chipped flint implements. The men of the New Stone Age, on the other hand, came into Europe after the greatest severity of the glacial climate had passed, and were surrounded mostly by forms of animals still existing. While not possessing the wonderful artistic ability of their predecessors, the Crô-Magnon cave artists, the men of the New Stone Age made pottery and cloth, and erected great sepulchres and temples of stone for their dead. They lived in more or less settled communities and depended upon an artificial food supply, raising cereals and keeping flocks and herds, instead of depending wholly upon hunting. Thus they were the true forerunners of civilization. Their skulls and skeletons also show that they belong to races still existing, including the Alpines or Central Europeans and the Mediterraneans or South Europeans.

*The Azilian or Transitional Period Between the Old Stone Age and the New Stone Age*

The people that colored the pebbles pictured on page 25 lived in the transitional period, called Azilian, between the Old Stone Age and the New Stone Age. Like the men of the Reindeer Age (Magdalenian, or close of the Old Stone Age) they made small chipped flint implements for planers and knives, and awls and polishers from bone; but their flint implements were very small and angulate. Because of the increasing scarcity or absence of the reindeer, which had been abundant in the dry, cold climate of Magdalenian times, the Azilians were forced to fashion their harpoons out of stag antlers. Unlike their predecessors they did not make the beautiful engravings and sculptures of animals on bone or draw realistic animal pictures on the walls of caves.

On the other hand they differed from their successors of the New Stone Age in that they had no pottery or domesticated animals.

*Colored Pebbles from Mas D'Azil, France*

(From Obermaier's *Fossil Man in Spain*, 1924)

These colored pebbles were found in the great cavern of Mas d'Azil, in the foothills of the Pyrenees, about forty miles southwest from Toulouse, France. The cavern had been frequented by men of many successive ages, who left no less than nine layers of deposits ranging from the Early Magdalenian (late Old Stone Age) through the Neolithic (New



Stone Age) to the Iron Age of the Gauls and Romans. The pebbles were found in the sixth layer, above the late Magdalenian layer, and just below the Neolithic level. Thus the people that used the colored pebbles lived in the transitional period (Azilian) between the Palæolithic and the Neolithic. The pebbles are painted on one side with peroxide of iron, a deposit of which is found in the neighborhood of the cave. The symbols, in some cases at least, are conventionalized designs from earlier and more realistic representations of objects. Their use is not fully known—perhaps they might have been pieces in a game, or “luck stones.”

### *Men of the New Stone Age*

Men of the Neolithic, or New Stone Age, continued to use chipped stone implements, but unlike their predecessors, they often polished them. They were the direct forerunners of civilization. They cultivated the ground, raising cereals, and had domesticated cattle and other animals; they made pottery and wove textiles; they lived in villages of huts, often built on piles near the shores of lakes. They erected sepulchres and temples of huge stones (dolmens, megaliths)

### *The Neolithic Stag Hunters*

This mural group also is in its place in the hall (at the west end) having been completed in 1919. It represents men of the Nordic race, brown- or fair-haired, hunters of the stag, living along the southern shores of the Baltic in the earliest stage of the New Stone Age, a stage known as the Campignian from remains of huts and rudely polished stone implements found near Campigny in France. The scene is on the border of one of the northern beech forests and represents the return from the hunt. After the ardor of the chase the hunters have thrown off their fur garments. The chieftain in the center is partly clad in furs; in the coming winter season he will be wholly fur clad. His son, a fair-haired youth with a necklace of bear claws, grasps a bow and arrow and holds in leash a wolf dog, ancestor of the modern sheep dog of northern France. The hunters, with spears tipped with stone heads, are resting from the chase. Two vessels of pottery indicate the introduction of the new ceramic art, accompanied by crude ornamentation.

This race was courageous, warlike, hardy, but of a lower intelligence and artistic order than the Crô-Magnons: it was chiefly concerned, in a rigorous northern climate, with the struggle for existence, in which the qualities of endurance, tribal loyalty, and the rudiments of family life





*Painted by Charles R. Knight, under the direction of  
Henry Fairfield Osborn. Copyrighted Photograph*

### STAG HUNTERS OF THE NEW STONE AGE (Neolithic)

Men of the Nordic race, brown- or fair-haired, living along the southern shores of the Baltic in the earliest stage of the New Stone Age.



were being cultivated. Rude huts take the place of caverns and shelters, which are now mostly abandoned.

These were tall men with high, narrow skulls, related to the existing Nordic race, more powerful in build than the people of the Swiss Lake Dwellings. Skulls and skeletons representative of this hardy northern type are abundantly known in Scandinavia, but have not as yet found their way to our American Museum collections.

### *The Great Fossil Mammals Contemporaneous with and Hunted by Man*

The Hall of the Age of Man contains four chief collections of the mammals of the world during the period of the Age of Man. In Europe man hunted the reindeer, the wild horses and cattle, and the mammoth. He used the hide of the reindeer for clothing, the flesh and marrow for food. He carved the bones as well as the ivory tusks of the mammoth.

The successive cultural stages appear to have originated first in Egypt and southwestern Asia, whence they spread into southeastern Europe, finally reaching northwestern Europe.

The mammoth, the northern, hairy type of elephant known to early explorers of fossil remains, was foremost among the great mammals hunted by man. The previous history of the proboscidean order is also shown in the Hall of the Age of Man.

This is one of the romances of evolution quite equal in interest to the evolution of the horse and the collection in the museum is remarkably complete. The early stages in the evolution of the proboscideans, beginning with the *Palæomastodon* discovered in the Fayûm region of northern Africa, carry us back into times far antecedent to the Age of Man, namely, into an early period of the Age of Mammals, the Oligocene. Thus the visitor can see here the entire history of the evolution of the proboscideans, which taken altogether is the most majestic line of evolution that has thus far been discovered. The evolution of the proboscideans culminates in the mastodons and mammoths.

### *Four Scenes in the Glacial Epoch*

The four great murals on the north wall of the Hall of the Age of Man represent scenes near the close of the Glacial epoch in the Northern Hemisphere.

These four scenes belong in the same period of geologic time, namely, the final glacial stage, the period of the maximum advance of the glaciers over the entire Northern Hemisphere, of the most intense



cold, and of the farthest southward extension of the northern types of mammals. This is the time of the Crô-Magnon race, and our knowledge of the mammals, reindeer, and rhinoceroses is derived from the actual Crô-Magnon paintings and etchings, chiefly those found within the caverns. The murals are as follows:

*Midwinter*.—The woolly rhinoceros in northern France.

*Early Winter*.—The reindeer and mammoth on the river Somme, France.

*Midsummer*.—The mastodon, royal bison, and horse on the Missouri River, in the latitude of Kansas.

*Autumn*.—The deer-moose, tapir, and giant beaver, in northern New Jersey.

#### *Glacial Midwinter in Northern France*

The woolly rhinoceros, like the woolly mammoth, was heavily enwrapped in hair, beneath which was a thick coat of fine wool. With this protection the animal was quite indifferent to the wintry blasts which swept over the steppe-like country of northern France. This golden-brown wool is actually preserved on the side of the face of one specimen discovered, which is now in the Museum of Petrograd (Leningrad). The head of the rhinoceros was long and narrow, like that of the white rhinoceros of Africa, but the jaws were narrower and the upper lips were more pointed. It is an animal quite distinct from the great white rhinoceros still extant in Africa, which is a grazer with broad lips. In the distance in the painting are shown the saigas, antelopes which wandered over France at that time, and a group of woolly mammoths.

#### *Early Winter Scene on the Somme River in Northern France*

The scene represents the two herds, reindeer and mammoth, migrating southward from the banks of the river Somme. These reindeer and mammoths are, in fact, depicted very precisely in the paintings and engravings left by the Crô-Magnon artists—especially in the cavern of Font-de-Gaume. It is a striking fact that, in the case of the mammoth, every painting, drawing, etching, and model which the Crô-Magnon man has given us exhibits exactly the same characters: the long hairy covering, the very high hump above the forehead, the notch between the hump and the neck, the very high shoulders, the short back, the rapid slope of the back over the hind quarters, the short tail. There is no doubt that, aided by these wonderful Palæolithic designs, the artist, Mr. Knight, has given us a very close representation of the actual appearance of the woolly mammoth.

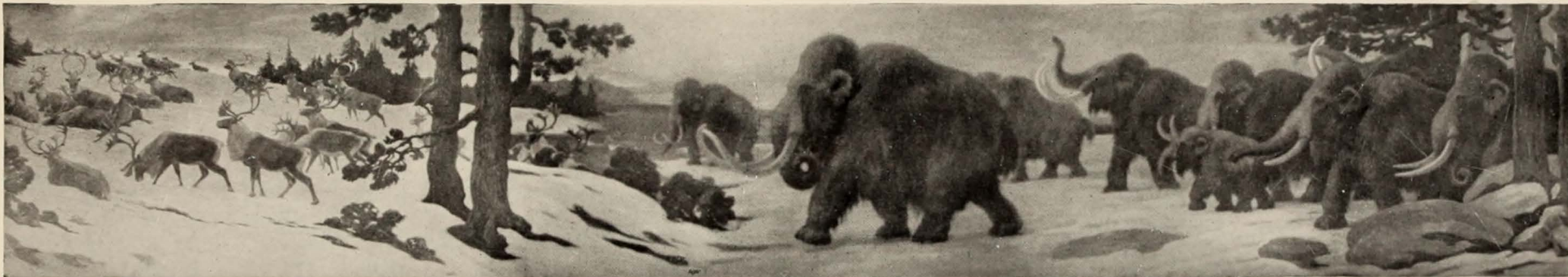




*Painted by Charles R. Knight, under the direction of  
Henry Fairfield Osborn. Copyrighted photograph*

THE WOOLLY RHINOCEROS IN A GLACIAL WINTER, NORTHERN FRANCE

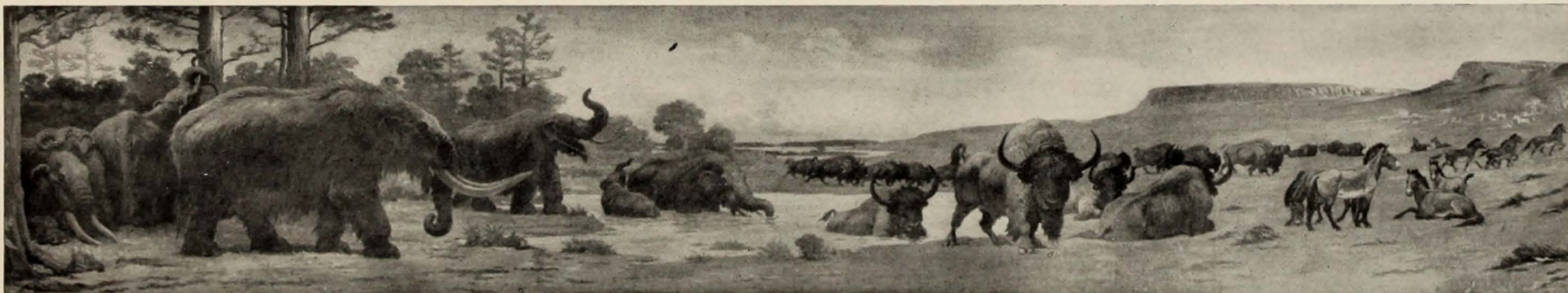




*Painted by Charles R. Knight, under the direction of  
Henry Fairfield Osborn. Copyrighted photograph*

#### THE REINDEER AND MAMMOTH ON THE RIVER SOMME, FRANCE

These animals were abundant in Europe in the cold dry climate, south of the great slowly retreating ice-sheet of the "Fourth Glaciation." They were hunted and accurately depicted by the Crô-Magnon artists.



*Painted by Charles R. Knight, under the direction of  
Henry Fairfield Osborn. Copyrighted photograph*

#### THE MASTODON, ROYAL BISON AND HORSE ON THE MISSOURI RIVER, IN LATE GLACIAL TIMES

South of the farthest advance of the ice sheet the mastodon lived in the forests of the east, while giant bison and wild horses roamed on the plains of the west. Many occurrences of fossil human bones have been reported in North America, but none have yet been proven to be older than the latest glacial times.



*Midsummer on the Missouri*

The summer scene on the Missouri River (on the parallel of Kansas) represents the region south of the farthest advance of the ice sheet. The mastodons are grouped in such a manner as to show the characteristic low, flattened head, the long low back, the symmetrical fore and hind quarters, the extremely short, massive limbs, and the very broad and massive hip region as seen from behind. In the center of the picture stands the majestic *Bison regius*, the royal bison, known only from a skull, a superb specimen with the horn cores attached, in the collection of the American Museum. These animals were like gigantic buffalo or bison, beside which the modern buffalo would appear very diminutive. The characters of the hair and wool are not known, but it is assumed that they were similar to those of the existing buffalo, since the paintings of the bison by the Crô-Magnon artists in France all show the distinctive beard below the chin. At the right is a group of wild American horses of the period, the last of their race in this country; the species is *Equus scotti*, the skeleton of which has been discovered in northern Texas.

*Early Autumn in New Jersey*

The autumn scene in northern New Jersey embraces three very distinctive North American types of the period, all of which have become extinct. The deer-moose, *Cervalces* (to the left), was described by Professor W. B. Scott, of Princeton, from a single skeleton found in the marl beds of northern New Jersey, which is now preserved complete in the Princeton Museum. The American fossil tapir (in the center) is known from sparse remains, the best of which were among the earliest discoveries of the pioneers of American palæontology. The giant rodents of the genus *Castoroides* (see two individuals at the right in the painting) are known from nearly complete skulls and skeletons discovered in New York, Ohio and other central western states.

*The Tar Pools of Southern California*

This mural represents a scene in southern California, in the vicinity of the Rancho-la-Brea deposits, including the remains of the astonishing group of animals caught in the asphalt trap, so splendidly represented in the collection of the Museum of History, Science, and Art, of Los Angeles.

The most characteristic animals of North and South America that lived during the Age of Man (see the south side of the hall) are known through some of the unique remains from the famous deposits of Rancho-





*Painted by Charles R. Knight, under the direction of  
Henry Fairfield Osborn. Copyrighted photograph*

### THE MASTODON

This distant relative of the elephants may have been a contemporary of early man in the closing phases of the period of the glaciers, in North America. The average mastodon was under nine feet in height, but he was very heavily built, being nearly twice as broad as an elephant.





*Painted by Charles R. Knight, under the direction  
Henry Fairfield Osborn. Copyrighted photograph*

### THE WOOLLY MAMMOTH

This great elephant was characteristic of the latter part of the period of the glaciers in Europe. He was hunted by the Crô-Magnons. Owing to differences in scale of the figures the Mammoth is made to appear much larger than the Mastodon which was not the case. The Mammoth was a few inches the taller, about the size of the Indian Elephant, but the Mastodon was much the bulkier, and very much the heavier of the two.



la-Brea of southern California, especially the sloths, saber-toothed tigers, and wolves of the period—to which it is hoped that we may add some of the less abundant forms, like the camel and the horse. So far as possible, through exploration and exchange, this quarter section of the hall will represent the mammalian life of North America, in contrast with the mammalian life of South America during the same period of time.

#### *A Loess Storm on the Pampas of Argentina*

A mural on the western wall (at the left) of the Hall of the Age of Man presents a South American scene during the Old Stone Age. It depicts the ancient pampas of Argentina with the winding river La Plata in the background, and a typical extinct mammalian fauna. In the distance at the right a violent dust storm is transporting columns of fine, impalpable dust known as loess.

The Museum is extraordinarily rich in the great Pampean Collection presented by certain of the trustees in 1899. This collection shows the close connections between North and South America in glacial times.

One of the most wonderful groups of fossils in the Museum, is the sloth and glyptodont group on the southern side of the Hall of the Age of Man): this includes five great sloths of three species (the *Mylodon*, *Lestodon* and *Scelidotherium*) and three glyptodonts. These animals, so entirely different in external appearance and habits, nevertheless belong to the same order of mammals, the Edentata, which is distinguished by the absence of enamel on the teeth. It is important to bring these two animals together in the same exhibit, so as to show the very wide contrasts in adaptation which may occur within the limits of a single mammalian order: the sloths covered with long hair and with vestiges of armature embedded in the skin, the glyptodonts nearly hairless, and encased in powerful bony armature, which may have protected them from attack by the saber-toothed tiger of the period.

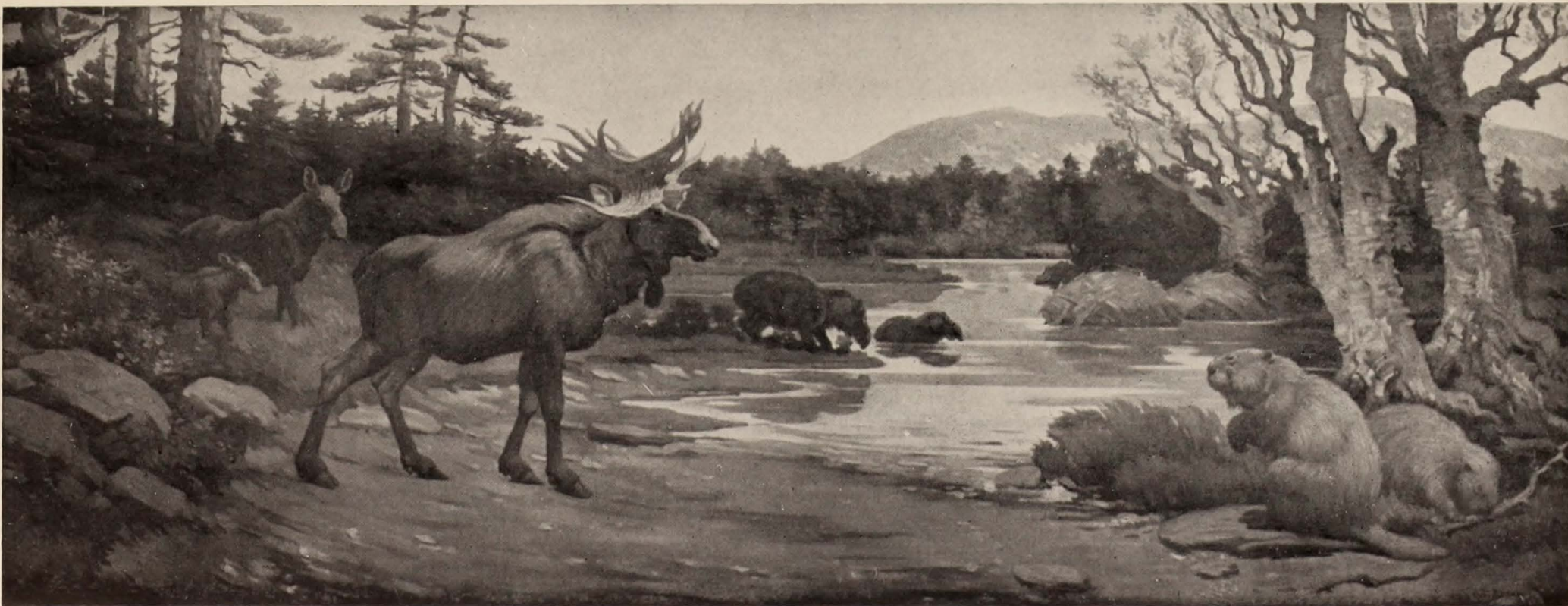
#### *Appendix*

##### *The Family Tree of Man*

By William K. Gregory

Man is no doubt vastly superior to his distant relatives the anthropoid (man-like) apes. His brain and mind are on far higher levels of development, he walks erect, he is able to speak. Man has a long line of ancestry of his own, extending for perhaps two million years or more, far back into the Age of Mammals.





*Painted by Charles R. Knight, under the direction of  
Henry Fairfield Osborn. Copyrighted photograph*

#### AUTUMN IN NORTHERN NEW JERSEY DURING LATE GLACIAL TIMES

The deer-moose (*Cervalces*) was a species of deer (now extinct) combining characters of the deer and of the moose; the tapirs (center), are related to those now found in Central and South America; the giant beaver (right) is now extinct.



*Painted by Charles R. Knight, under the direction of  
Henry Fairfield Osborn. Copyrighted photograph*

#### THE DEATH-TRAP OF RANCHO LA BREA, CALIFORNIA

Animals gathered around a "tar-pool" or asphalt pit. Giant condors, sabre-tooth tigers and ground sloths (*Mylodons*) in the foreground; wolves and mammoths in the background. Attracted by the water on the surface, one of the sloths is becoming mired in the treacherous pit. The scene represents the abundant animal life of Southern California during the latter part of the glacial times, when the eastern states and northern Europe were covered by great ice sheets.



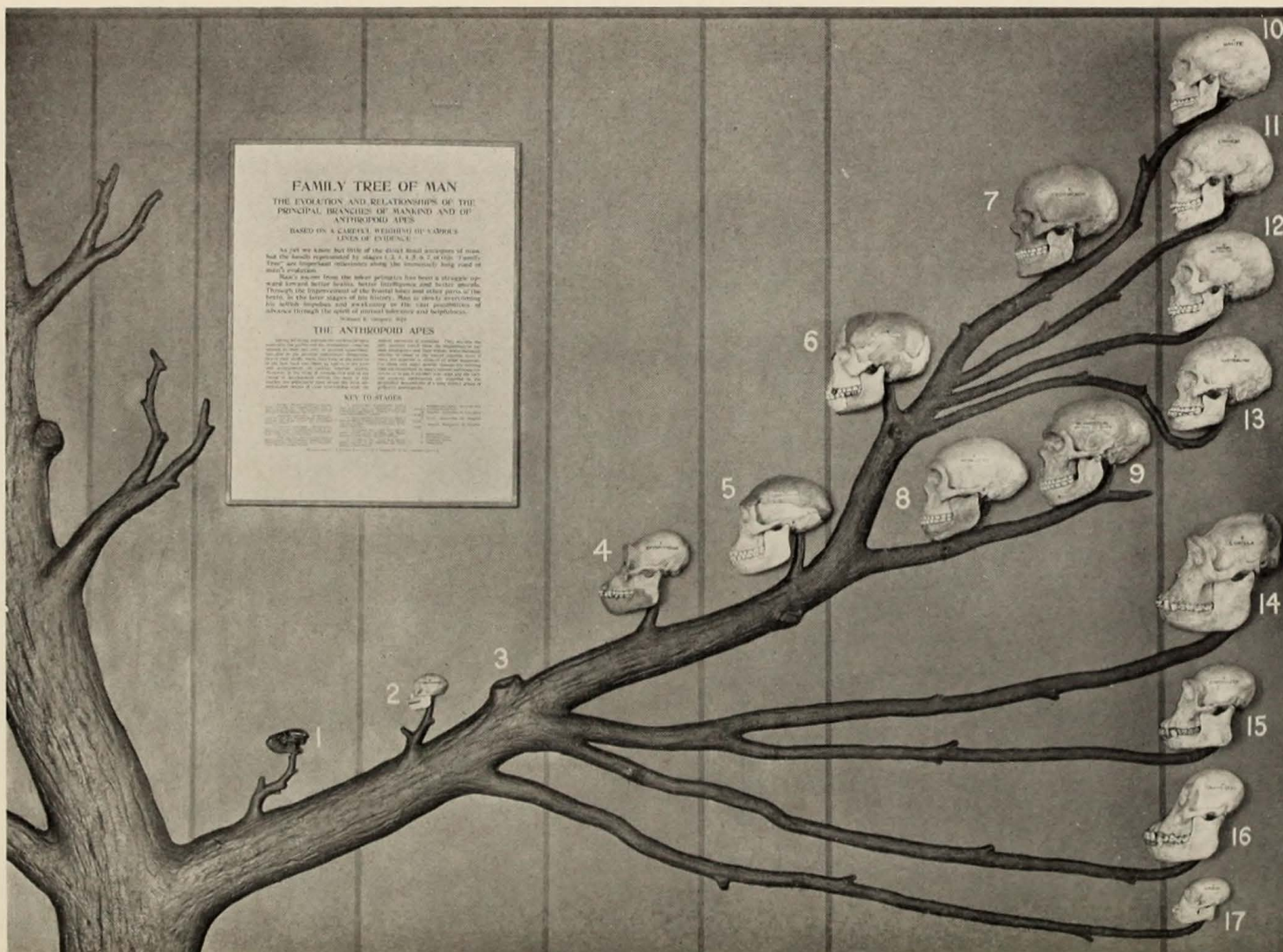


*Painted by Charles R. Knight, under the direction of Henry Fairfield Osborn. Copyrighted photograph.*

### A LOESS STORM ON THE PAMPAS OF ARGENTINA

The glaciers which covered so much of the northern hemisphere with a vast ice sheet during the Age of Man, were only locally developed in South America and never invaded the pampas of Argentina. Here lived a great assemblage of strange mammals, whose remains were often buried by the storms of fine dust (loess). The scene depicts in the foreground two giant ground sloths (*Mylodon*, *Lestodon*) and three glyptodonts; at the left a couple of toxodons are quietly browsing, while at the right are some of the slender-limbed *Macrauchenias*.



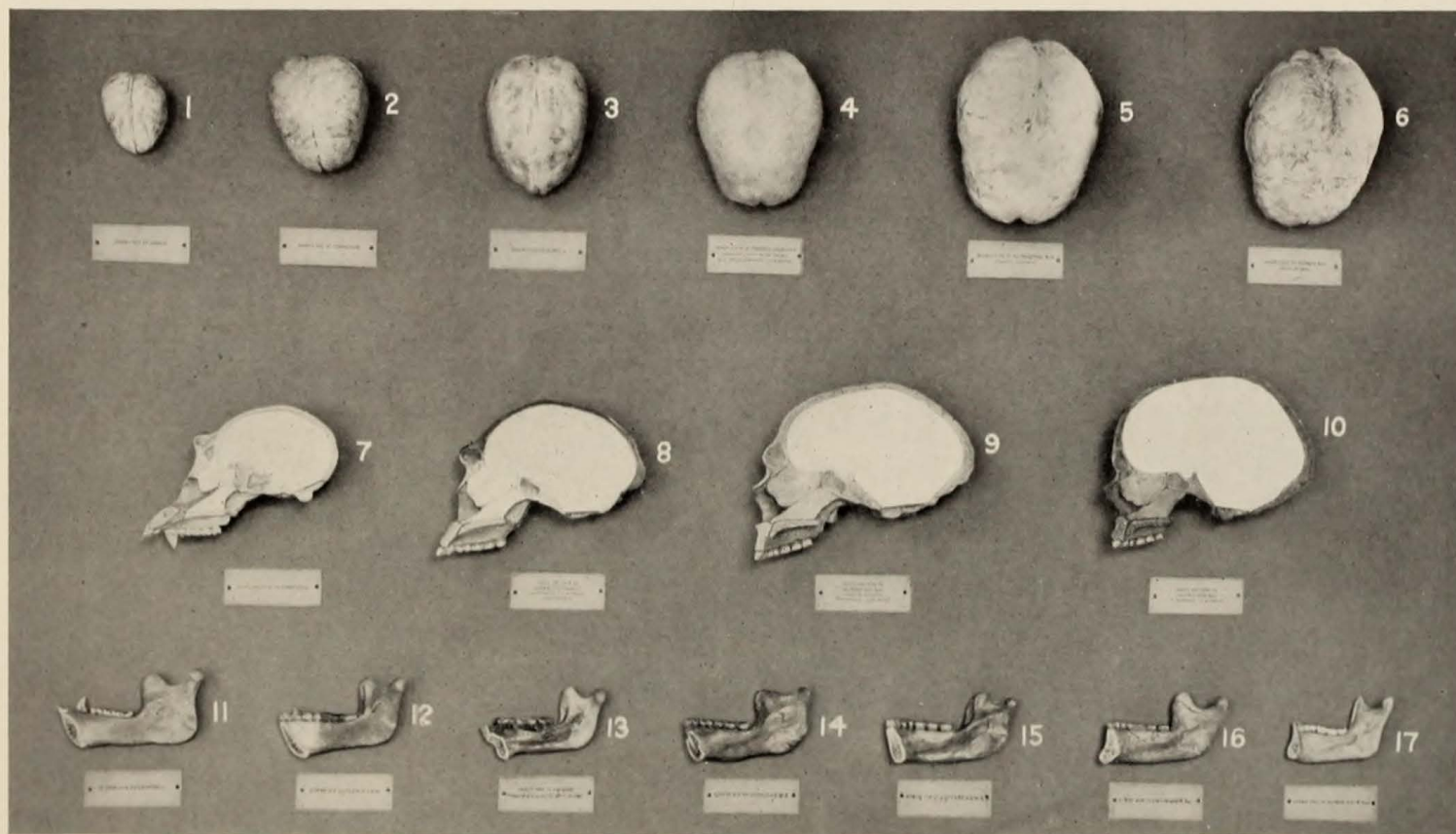


THE ASCENT OF MAN FROM LOWER MAMMALS  
 Showing the main and side branches of his family tree



## KEY TO STAGES

1. Primitive Primate (*Notharctus osborni*). Fossil skull and jaw, slightly reconstructed, of Eocene age, Wyoming, U. S. A. Original in American Museum of Natural History, New York.
  2. Prototypal anthropoid. Reconstruction, based on fossil jaw (*Propliopithecus hæckeli*) of Oligocene age, Egypt. Original jaw in Stuttgart Museum, Germany.
  - 3.
  4. Primitive anthropoid. Reconstruction, based on fossil jaws (*Dryopithecus frickæ*), of Miocene age, India. Original jaws in American Museum of Natural History, New York.
  5. Trinil Ape Man. Reconstruction, based on fossil skull-top (*Pithecanthropus erectus*) of Upper Pliocene or Lower Pliocene age, Java. Original in Teyler Museum, Haarlem, Holland.
  6. Piltdown Man. Reconstruction, based on fossil skull and lower jaw (*Eoanthropus dawsoni*) of Pleistocene age, England. Original in British Museum (Natural History) London.
  7. Heidelberg Man. Reconstruction, based on fossil jaw (*Homo heidelbergensis*) of Lower Pleistocene age, Germany. Original in University of Heidelberg, Germany.
  8. Neanderthal Man. Fossil skull and jaw, slightly restored, of the Old Stone Age, Europe. Originals in Paris Museum of Natural History.
  9. Crô-Magnon Man. Fossil skull and jaw, slightly restored, of late Palæolithic age, France. Originals in Paris Museum.
  10. American. Representing the Caucasian group.
  11. Chinese. Representing the Mongolian group.
  12. Hottentot. Representing the Negro group of races.
  13. Australian black-fellow. One of the most primitive of existing human races.
  14. Gorilla, Africa.
  15. Chimpanzee, Africa.
  16. Orang-utan, Borneo.
  17. Gibbon, India.
- Brain Casts of: 1, Gibbon; 2, Chimpanzee; 3, Gorilla; 4, Pithecanthropus; 5, Neanderthal Man; 6, Modern Man.  
Skull Sections of: 7, Chimpanzee; 8, Pithecanthropus; 9, Neanderthal Man; 10, Crô-Magnon Man.  
Lower Jaws of: 11, Chimpanzee; 12, Piltdown Man; 13, Ehringdorf Man (Neanderthaloid); 14, Heidelberg Man; 15, Neanderthal Man; 16, Crô-Magnon Man; 17, Modern Man.



COMPARATIVE ANATOMY OF MAN AND ANTHROPOIDS

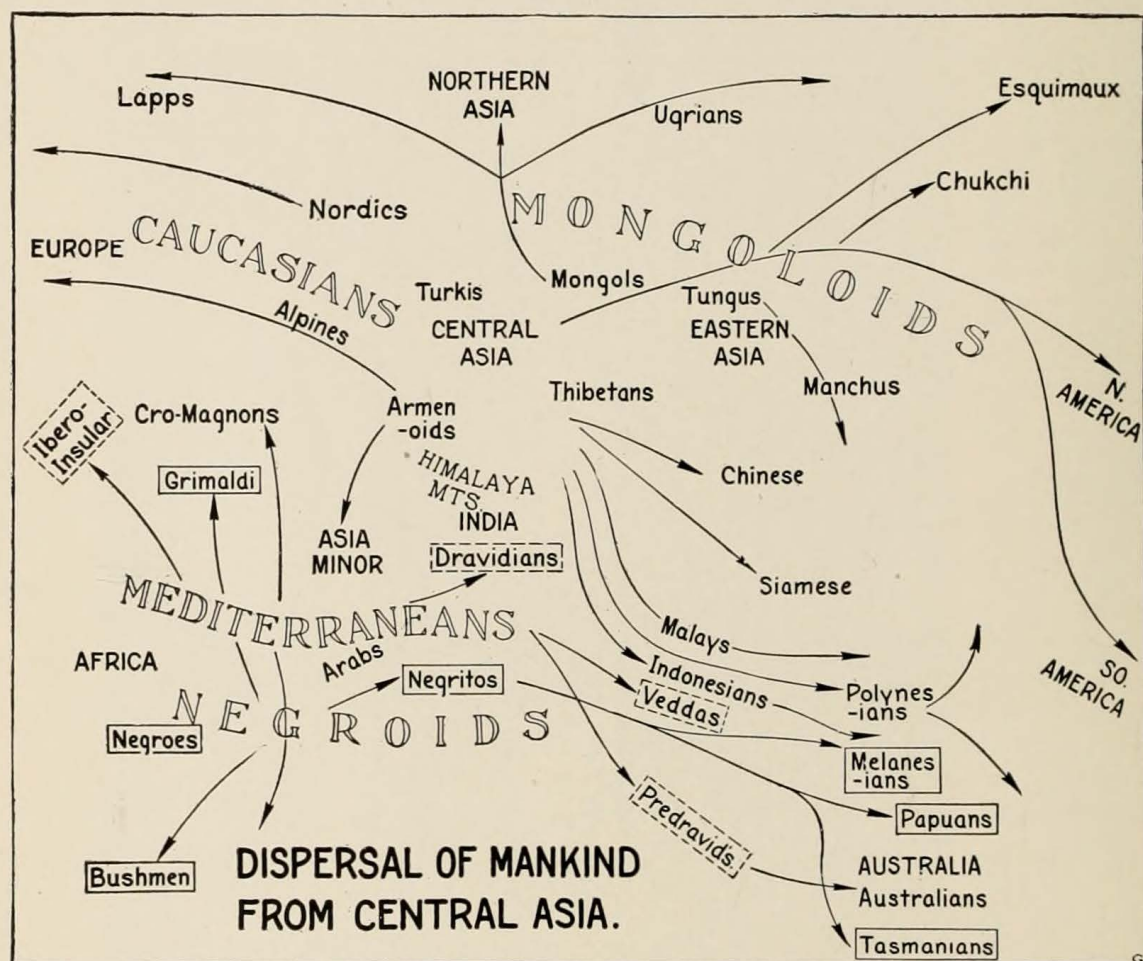


The striking resemblance in anatomical plan between man and his nearest known relatives, the anthropoid apes, is well illustrated in these comparative series of "brain-casts," skull-sections, and lower jaws.

The "brain-casts" at the top are casts of the brain-containing cavity of the skull and represent the general form of the brain, as covered by its membranes and blood-vessels. Commencing at the left, with the brain-cast of the gibbon (the most primitive of existing anthropoids, or great apes), the series shows a progressive increase in size and complexity as we pass to the chimpanzee, gorilla, and *Pithecanthropus* (the most primitive known representative of the human family). The brain of the Neanderthal race, while larger in bulk than most modern human brains, was inferior to them in many respects. It was relatively low in proportion to its width, and its frontal lobes, the seat of some of the higher mental faculties, are narrower and less developed than in modern man.

The series of skull sections indicates the following changes as we pass from the anthropoids toward man: (1) the increasing size and depth of the brain; (2) the progressive elevation of the forehead; (3) the forward growth of the brain-cavity above the face; (4) the reduction in size of the bony face, and (5) the retraction, or shrinking backward, of the front part of the jaws.

The lower jaw series shows the inner side of the right half of the jaw, beginning with that of the chimpanzee. In this stage the front end of the jaw slopes backward, while in modern white man it slopes forward. Intermediate stages are seen in the Piltdown, Ehringsdorf, Heidelberg, Neanderthal and Crô-Magnon jaws, all belonging to races now extinct. This progressive development of the chin has probably been partly associated with the increased use of the tongue as an organ of speech.



Since remains approximately a half million years old, identified as those of man, have been found in England, in Germany and in Java, it is apparent that early man was a great traveler. Did an ancestral race live in central Asia? Mongolia and Tibet are a favorable geographic region for the beginning of man, who is usually held to have originated in one place and branched widely.



Yet the science of comparative anatomy has revealed the fact that man is constructed upon the same general anatomical plan as that of his more backward relatives, the gorilla and the chimpanzee, and that he is connected with them by a very large number of anatomical marks of distant kinship. The common plan, with differences in detail, upon which man and the great apes are constructed, becomes more and more evident and indisputable as our practical knowledge and experience of human and comparative anatomy increase.

The science of comparative anatomy, in combination with the science of palæontology, has provided the basis for the exhibit called "The Family Tree of Man," which is an attempt to present in a simple graphic form what is accepted by the best scientific authorities.

The Primates first became distinguishable from other orders of mammals very early in the Age of Mammals, that is, some three million years ago, according to the most conservative estimate. The first Primates were even at that early time adapted for living in trees and had grasping hind feet, but as may be judged from their small crania, they were greatly inferior in brain development to their modern descendants. This stage of evolution is represented in the exhibit by a cast of the skull of an extinct primate, *Notharctus osborni*, from the Middle Eocene of northwestern Wyoming.

The next two stages of ascent are so far known only from two small lower jaws dating from the Lower Oligocene of Egypt. In the first of these, *Parapithecus*, the lower jaw and dentition are intermediate in character between the Eocene tarsiod primates and the oldest anthropoid. In the second jaw (*Propliopithecus*) the number and position of the teeth and the form and detailed arrangement of the cusps of all the teeth are exactly such as would be expected in the common starting point for the divergent lines leading to the gibbons, to the higher apes and to man.

In the long ages of the Miocene epoch (which is at the beginning of the second half of the Age of Mammals) there was a great branching out into different lines on the part of the primitive anthropoid stock, some of which began to foreshadow the modern gorillas and chimpanzees, while others (e.g., *Sivapithecus*) showed certain pre-human characters in the jaw and molar teeth.

By the latter part of the Age of Mammals the pre-human stock had probably become broken up into several distinct species, some of which were more backward, others more progressive toward higher types. The most backward of these early pre-human races was the *Pithecanthropus* or Ape-man, from the Upper Pliocene (late Age of Mammals) or



Lower Pleistocene (early Age of Man) of Java. The top of his skull is strongly reminiscent of the apes and indeed it was long debated whether *Pithecanthropus* was a progressive ape, or a primitive man; but the imprint of the frontal lobes of the brain on the inside of the skull show that he was an extremely primitive man, perhaps ancestral to the Heidelberg and Neanderthal races.

More ape-like than *Pithecanthropus* but a step above the gorilla is the skull of the man-ape found towards the end of 1924, at Taungs, Bechuanaland, Africa and named by its describer, Prof. Raymond A. Dart, *Australopithecus africanus*.

According to Professor G. Elliot Smith "if the progress in the direction of the human family is only slight, it is very important because it is not partial, but affects so many details of the face and skull, and it involves the brain, which obviously is the real criterion of any advance towards the intellectual supremacy of the human family."

The Dawn Man (*Eoanthropus*) of the Upper Pliocene, or Lower Pleistocene of England, had a more progressive type of brain case than that of *Pithecanthropus*, but his lower jaw was very ape-like, lacking a bony chin.

The Heidelberg jaw (Lower Pleistocene age, Germany), although already definitely human, is probably several hundred thousand years old. The jaw is of great size, with retreating chin and primitive human teeth.

The Neanderthal Race occupied Europe in the latter part of the Glacial period. The head is large, but the forehead is low, with strongly projecting brow ridges.

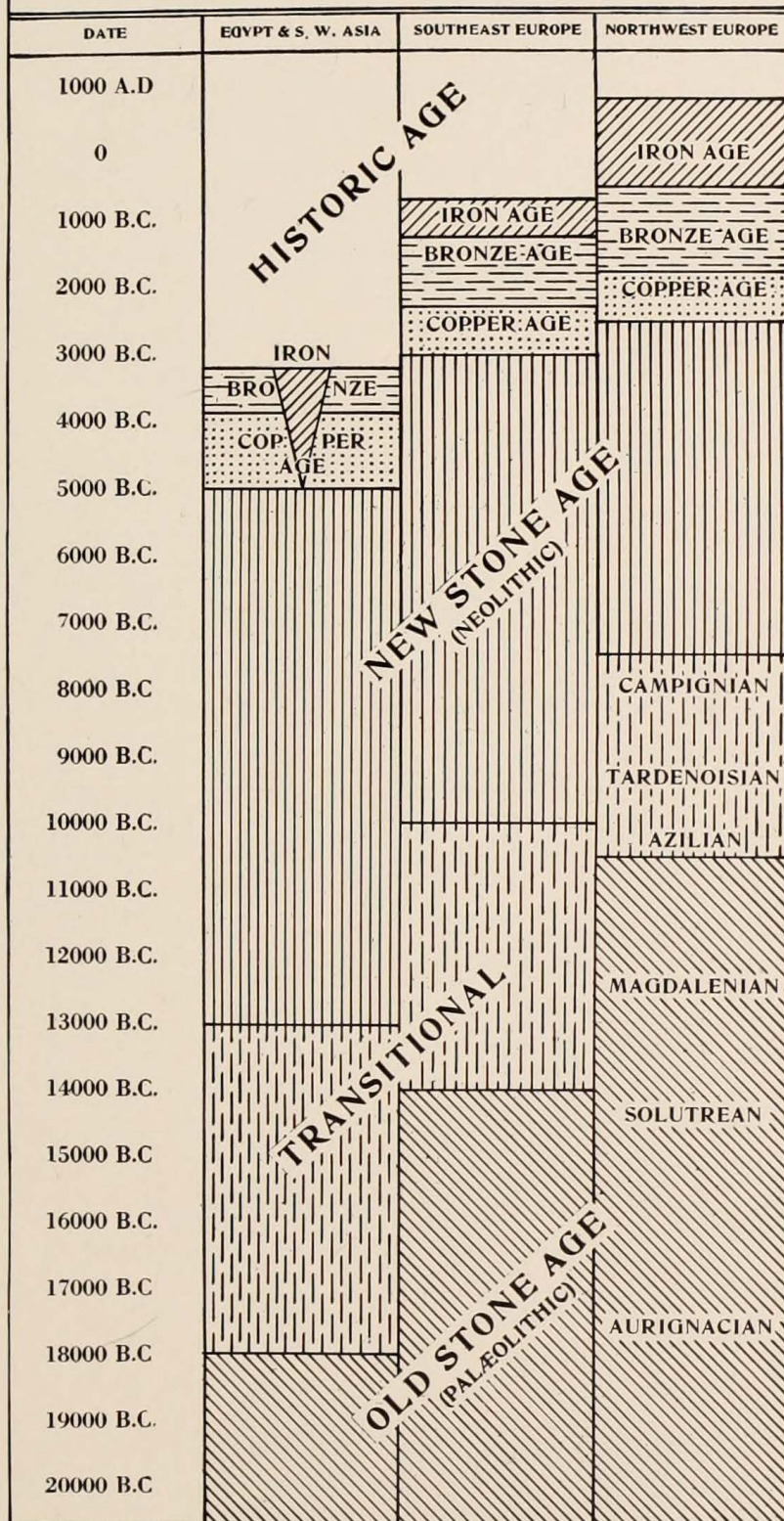
The Crô-Magnon race occupied Europe in the closing stages of Glacial times. It was in a high stage of evolution and belongs with modern races of man in the species *Homo sapiens*.

The Australian aboriginals represent one of the most primitive of the surviving races of man. They are probably distantly related to the most primitive peoples of India and to the early stock of the white races.

The detailed relationships of the other races of men are illustrated in special exhibits in the Introduction to Anthropology, now on the second floor, extreme west tower.



**SUCCESSION OF PREHISTORIC AGES  
IN EGYPT AND IN EUROPE**  
FROM THE CLOSE OF THE OLD STONE AGE UPWARD  
N. C. NELSON, 1921



*The Taungs Man-Ape**Australopithecus*

The most recent discovery of a link in the chain of human descent was made at Taungs, Bechuanaland, Africa, and is the fossil skull of a young ape, which shows greater resemblance to man than does that of any other ape.

Dr. G. Elliot Smith, from whom we quote,<sup>1</sup> notes that this statement "must be qualified by the explanation that the step in advance had not carried far beyond the status of the Gorilla. But if the progress in the direction of the human family is only slight, it is very important because (a) it is not partial, but affects so many details of the face and skull, and (b) it involves the brain, which obviously is the real criterion of any advance towards the intellectual supremacy of the human family. This infant ape had a brain almost as big as the largest adult gorilla's, so that in the adult *Australopithecus* it may have attained to a size of 650 or even 700 c.c. If this is only about half the average dimensions of the modern European brain, it is within 250 c.c. of the earliest and most primitive human brain so far discovered—that of *Pithecanthropus*, the capacity of which was about 900 c.c., or at most 950."

Dr. Smith places *Australopithecus* just below *Pithecanthropus*, and possibly *Hesperopithecus*, in the Family Tree of Man, the one being a Manlike Ape and the other an Apelike Man.

At this time, May 1, no casts of this specimen have reached the United States.

<sup>1</sup>*Australopithecus*, the Manlike Ape from Bechuanaland. "Illustrated London News"—Feb. 14, 1925, p. 240.







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FOR THE PEOPLE

FOR EDUCATION

FOR SCIENCE