DC – I
Paper: Social Formations and Cultural Patterns of the Ancient and Medieval World-1
Lesson: The Biological And Cultural Evolution of Mankind
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Introduction

Evolution is defined as the biological theory, which puts forward the idea that various types of animals and plants have their origin in other pre – existing types and that their distinguishable features are due to modifications in successive generations. Evolution also refers to a steady progress from simple to complex forms in the most general way or a change in the genetic composition of population through time.

The main objectives of this unit are to introduce students with the process that led to the cultural and biological evolution of mankind with the help of available archeological resources and existing scholarshi

Darwin Theory of Evolution

The first full exposure to the concept of evolution emerged through the writings of Charles Darwin. We are told that he did not invent the idea of evolution, it already existed, but he conclusively documented that evolution *has* occurred. His ideas gradually became acceptable to scientists and the general public. Darwin's research, comprising of the discovery of fossil bones and the observation of numerous species in South America, off the Pacific coast on Galapagos islands, convinced him that he could explain the variety in the natural world in more scientific terms. Darwin, we are told, was struck by the fact that finch birds found on the Galapagos were slightly different from one island to another. The key as to why the difference existed, he postulated, was because the various species lived in different environments and they had to *adapt* to different conditions. Over many generations, they changed anatomically to survive to reproduce.

According to scholars, Darwin's samples provided an excellent example of this process. The birds in arid environments had their beaks better suited for eating cactus and they got more food and better conditions to mate. Similarly, those with beaks shaped better to get nector from flowers or eating hard seeds in other environments were at an advantage there. This process came to be known as Darwin's theory of 'natural selection'. He furthered his argument by stressing that individuals, having a variation that gave them advantage in staying alive long enough, successfully reproduced and passed on their traits to next generation. The traits became more common and the population evolved. Darwin called this 'descent with modification'. Darwin believed that environment was not producing the variations. We are told that he correctly thought that variation *already* existed and that nature just selected the best to survive. By the late 1860s Darwin described this process as 'survival of the fittest'.

Did you know
The phrase 'survival of the fittest' was apparently first used as a social concept by the influential British philosopher Herbert Spencer as a central tenet of what later came to be known as "Social Darwinism". He misapplied Darwin's idea of 'natural selection' to justify European domination and colonization of much of the world.

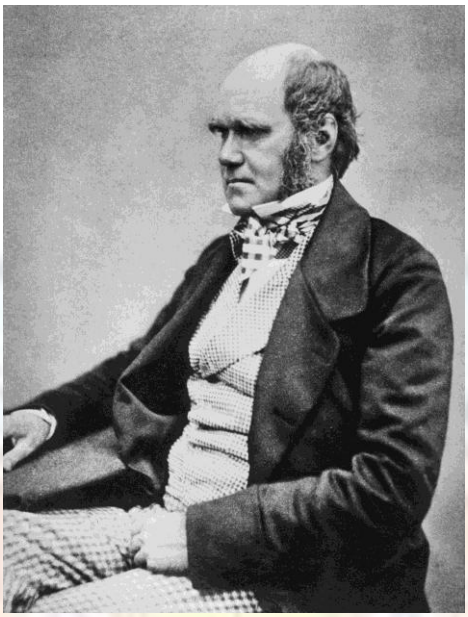

Photo of Charles Darwin
Source:
https://upload.wikimedia.org/wikipedia/commons/2/2e/Charles_Darwin_seated_crop.jpg

Charles Darwin used the concept 'survival of the fittest' as a synonym for 'natural selection' in the 5th edition of his *Origin of Species* published in 1869. From an evolutionary perspective, the fittest individuals are simply the ones who have the combination of traits that allow them to survive and produce more offspring that in turn survive to reproduce. What makes an individual fit depends on the environment of the time. This theory was very different from **Chevalier de Lamarck's** who believed that the environment *altered* the shape of individuals and that these *acquired* changes were then inherited. In Lamarck's theory the main force for evolution was a natural tendency for living things to become more complex. The need to *adapt* to changing environments was a secondary force. In his most commonly cited example he claimed that the long necks of giraffes had developed because changes in the growth of certain trees had forced the animals to reach higher and higher for the leaves on which they fed. Such repeated reaching made their necks stretch and this acquired characteristic was passed on to their offspring. Darwin, by contrast, would maintain that long necks arose by chance and then were passed to future generations because their possessors survived and had offspring. Lamarck's *System of Invertebrate Animals* and *Zoological Philosophy* were nevertheless considered path breaking in the theory of evolution because he explained the enormous diversity of living organisms during the late 18th century when even some scientists were giving their interpretations according to the biblical origin of humans.

19th century critics of Darwin argued that he had misrepresented his data. They said that God had created different species as they are and that no evolution had occurred. Darwin's evidence that evolution had occurred was very threatening to many Christians who believed that people were created specially by God and that they have not changed biologically since

that creation. The idea that there could have been prehistoric humans who were anatomically different from modern humans was rejected. However, extensive field research since the early 1970s has proven Darwin correct. It was *On* the *Origin of Species* that convinced most scientists and other educated people in the late nineteenth century that life forms do change through time. This prepared people for the acceptance of earlier human species.

The central argument of Darwin's theory is that evolution was a slow and gradual process. It started from the existence of hereditary variation in the species, where those with favourable variations had an increased chance of survival. According to this theory new species evolved due to minor variations in individual member of species and the variations may be inherited by the offspring. The variations will end up in the creation of a new species if the variation does not result in death or less efficient adaptation, it might continue being passed on to successive generations. The favorable variations are preserved and multiplied from one generation to another at the expense of the less advantageous ones. Only those who are fit enough to survive the environment will continue. Darwin's dynamic theory of evolution placed human beings within this process and established that human beings evolved from earlier life forms. Stephen Jay Gould further complimented Darwin's theory by arguing that evolution is marked by long periods of evolutionary stability. In Gould's view, long and gradual periods of evolution were interspersed with shorter periods of evolutionary activity. While there were long periods when almost no change took place, there were short phases when there was a burst of evolutionary activity. There are thus gaps in the process of evolution which the current research in the field is in the process of fulfilling.

Did You Know

Two related developments assisted in providing a firm basis for the concept of evolution. These were a) the emergence of geology as a scientific discipline and b) the study of fossils. Geology is the scientific study of origins, structure and the composition of the earth, especially its rocks. Fossils are imprints of animals or plants, which lived long ago, preserved in rocks. Fossil evidence of various types of hominids which have become extinct were found showing transition from one form to another. These are arranged in a chronological order to get a picture of gradual progression of forms, which can be seen as representing different stages of human evolution. Fossil evidence found in excavations, study of tools, ornaments, utensils, weapons, burials, pottery, etc. can all be treated as sources for the study of human evolution in prehistory – the mankind's unwritten past.

Sources and Prehistoric Culture

The sources of pre-history also point to a 'cultural evolution' of mankind. Human pre-history differs from history not only in terms of chronology or written records but also in the way it deals with the activities of archaeological cultures rather than named nations or individuals. We are told that prehistoric culture is a recurring assemblage of the artefacts from specific time and place. The artefacts are thought to constitute the material culture remains of the past and can be used to trace ancient groups of people. The classic definition of this idea comes from Gordon Childe : "We find certain types of remains – pots, implements, ornaments, burial rites and house forms – constantly recurring together. Such a complex of associated traits we shall call a 'cultural group' or just a 'culture'. We assume that such a complex is the material expression of what today we would call 'a people'." (Gordon V. Childe – *The Danube in Prehistory*). Most prehistoric cultures are named after either some artefact say the pottery type or the site at which the culture is defined. It is the means by which humans adapt to the challenges of the world's diverse environments and also maintain equilibrium with its environment. Thus human societies evolved from simple hunter-gatherers to complex civilization. Cultural evolution provided the grounds for thinking of early pre-history as a mirror of the contemporary world. According to Brian Fagan in *People of the Earth* – cultural evolution is the process by which human societies changed in the past from simple 'savagery' to the pinnacle of industrial civilization.

History of Evolution of Human Species

The human species represent the most advanced stage of a long process of evolution which began with the formation of the earth somewhere around 4,600 million years ago. The earliest forms of animate matter appeared on the earth around 3,500 million years ago and the earliest 'homo sapiens' appeared on the earth between 125,000 to 40,000 years ago. A significant fact which has played an important role in the evolution of species is the great ice age. The great ice age is a geographical epoch when ice began to recede on the face of the earth. Had this not happened, life would not have been possible. The term ice age is actually misleading for there was not one single continuous ice age but five rather distinct glacial periods, each separated from the next by a mild or warm inter glacial period. It is during the great ice age that mountains were formed, continents were lifted, water began to be locked in the Arctic circles etc. Animals and plants were thus forced to adjust to these drastic climatic changes and those species unable to attain equilibrium became extinct. Among the species that survived were **primates** and it is from the evolution of primates that we have modern homo sapiens sapiens. According to the evolutionary tree, modern man's evolution started with the evolution of primates. Primates had and still have special features like prehensile hands and feet, stereoscopic vision and they extensively used their forelimbs.

All living and extinct species of primates are divided into two suborders – the **Prosimii** (lemurs, lorises and tarsiers) and **Anthropoidea** (monkeys, apes and humans). Many prosimians are active arboreal predators hunting for small animals in the trees. Various species of prosimii are mainly found in Africa and South Asia. We are told that prosimii got separated from anthropoidea some 40 million years ago. Anthropoidea are characterised by a larger and more complicated brain than the other suborders. This order is also

characterised by arboreal and terrestrial living. It can also be described as a species of mammals in order of primates including Old World and New World monkeys (the **cercopithecoidea** and **ceboidea** respectively) and **Homonoidea**. The Old World monkeys are native to Africa and Asia inhabiting a range of environments from tropical rain forest to savannah and mountainous terrain. New World monkeys are found in central and south America and portions of Mexico. We are told that the noses of New World monkeys are flatter than the narrow noses of the Old World monkeys. New World monkeys are the only monkeys with prehensile The human species represent the most advanced stage of a long process of evolution which began with the formation of the earth somewhere around 4,600 million years ago. The earliest forms of animate matter appeared on the earth around 3,500 million years ago and the earliest 'homo sapiens' appeared on the earth between 125,000 to 40,000 years ago. A significant fact which has played an important role in the evolution of species is the great ice age. The great ice age is a geographical epoch when ice began to recede on the face of the earth. Had this not happened, life would not have been possible. The term ice age is actually misleading for there was not one single continuous ice age but five rather distinct glacial periods, each separated from the next by a mild or warm inter glacial period. It is during the great ice age that mountains were formed, continents were lifted, water began to be locked in the Arctic circles etc. Animals and plants were thus forced to adjust to these drastic climatic changes and those species unable to attain equilibrium became extinct. Among the species that survived were **primates** and it is from the evolution of primates that we have modern homo sapiens sapiens. According to the evolutionary tree, modern man's evolution started with the evolution of primates. Primates had and still have special features like prehensile hands and feet, stereoscopic vision and they extensively used their forelimbs.

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The superfamily Homonoidea is further sub - divided into i) **Pongidae** and 2) **Hominidae**. The members of the Pongidae are referred to as the 'great apes'. Apes emerged about 30 million years ago and unlike monkeys these weren't adapted exclusively to arboreal living i.e. they climbed trees but they exploited the ground as well. This family contains 4 species which

include the gibbon, chimpanzee, gorilla and orang-utan. The orang-utan is native to Sumatra and Borneo. The other three species are found in African forests. They range from primarily tree dwellers to ground dwellers and are tailless. They adopt semi-erect posture and they use their legs, hands and knuckles to assist them while walking.

Aegyptopithecus occupied a place on the evolutionary tree as ancestors of apes and we are told that he may have been the earliest true ape. It had a relatively flat face with forward facing eyes which scholars say is an adumbration of its human – like hominid descendants that evolved millions of years later. Aegyptopeithecus predates the divergence between apes and old world monkeys. Fossil remains further reveal the evolution of an ape which may have lived in Africa about 20 million years ago. This was the **Dryopithecus**. It is representative of early members of the lineage that includes humans and other apes and even old world monkeys. It was a developing type of ape, and was the distant forerunner of gorillas and chimpanzees. A form close to the further branching of dryopithecus stock is represented by **Shivapithecus** who was thought to be the direct ancestor of orang-utan. It is considered to be closely related to genus **Ramapithecus**. Some authorities maintain that shivapithecus and ramapithecus are same species. Before 1980s, these species were interpreted as having both apelike and human like features. For long ramapithecus was presumed to be the first step in the evolutionary divergence of humans from the apes. The new findings and reinterpretation of existing remains, however, convinced more authorities in the field that shivapithecus was the ancestor of modern orang-utan and that it diverged from the common lineage of the African apes and humans more than 13 million years ago. The fossil evidence on the issue is scanty regarding ramapithecus as well and extensive work is still going on in the Shiwalik hills, India, Pakistan. Nevertheless we are told that ramapithecus is distinguished by more advanced dentition and may have been in the line of direct ancestors of man. It probably inhabited forested area but scholars are not certain whether it walked upright. Its extinction is dated to about 8 million years ago.

The Hominidae

Chimpanzee Bonobo Gorilla
Source :
http://creationwiki.org/pool/images/a/a8/400px-Chhajju_Kanpur_Zoo.JPG
http://creationwiki.org/pool/images/a/a4/658px-Male_Bonobo_Lola_ya_Bonobo_2008.jpg
http://creationwiki.org/pool/images/8/85/Mountain_gorilla_line.jpg

The term Hominidae is used to describe the total member species of the human family that have lived since the last common ancestor of both man and the apes. In that family a **Hominid** is an individual species. Hominid includes both modern and extinct forms of human beings. What make the Hominids special are a large brain and the ability to walk on two leg i.e. bipedal locomotion. We are told that hominids successfully adapted to open savannah and woodland environments, developing different strategies for predator defence, foraging and social behaviour.

The earliest hominid fossil the **Ardipithecus ramidus** is a recent discovery. Its remains were found in the middle Awash valley of Ethiopia at the Aramis site. It is dated at 4.4 million years ago. Its remains, we are told, are incomplete, but they are enough to suggest that it had small brain measuring 300 to 360 cc. Its feet were better suited for walking but it had a more primitive walking ability than later hominids. We are told that it was bipedal when moving on the ground and quadrupedal when moving in the trees. Other fossil findings found with the ramidus fossils suggest that it was a forest dweller and had perhaps learnt how to use the club. We are told that with ramidus discovery, scientists are encouraged that some day they will fill the fossil gap all the way to the hominid - ape divide. The idea of missing link persists with ramidus although fossil record does not represent a straight line of ancestry. Many of the early hominids left no descendants and simply died out. It is not easy to decide which fossil represents the actual common ancestor of mankind.

On the basis of the fossil evidence however hominids are further divided into the genus **Australopithecus** and the genus **homo**. Australopithecus was the first to evolve and is considered the direct ancestor of man. A new species, Australopithecus **anamensis** is dated to be 4.2-3.9 million years old. It showed advanced bi-pedal features but the skull closely resembled ancient apes. This is a judgment based on the fossils found in the Allia Bay site (Kenya). Further in time a new species evolved – Australopithecus **Afrensis** which is said to have survived between 3.9 and 3 million years ago. It retained the ape like face with a sloping forehead, a distinct ridge over the eyes, flat nose and a chinless lower jaw. But it had a brain capacity of about 450cc. The species is said to have been bipedal but did not have a straight back. Until now the earliest evidence for hominid bipedality was the footprints embedded in 3.7 million years old volcanic ash at the Laetoli site in Tanzania. They were probably made by members of the Australopithecus afarensis until the recent discoveries of earliest known hominid ramidus. According to scholars the most named afarensis

skeleton of a small female named 'Lucy' found at the Hadar site, Ethiopia, bore indisputable limb and pelvic evidence of bipedality. But the new findings related to ramidus has pushed back the time for the emergence of bipedalism at least ½ a million years earlier.

Quite similar to Australopithecus Afrensis is the next species –Australopithecus **Africanus**— which lived about 3.2 million years ago. It was also bi-pedal but had a slightly large body size with a cranial capacity of 500cc. The brain was not advanced enough for speech but the shape of the jaw was somewhat like the human. Both the Australopithecus Afarensis and Africanus are known as gracile Australopithecines. They were followed by Australopithecus **Aethiopicus** who lived around 2.6 – 2.3 million years ago. The most famous of all bones of this species is the 'Black Skull' found by Allan Walker.

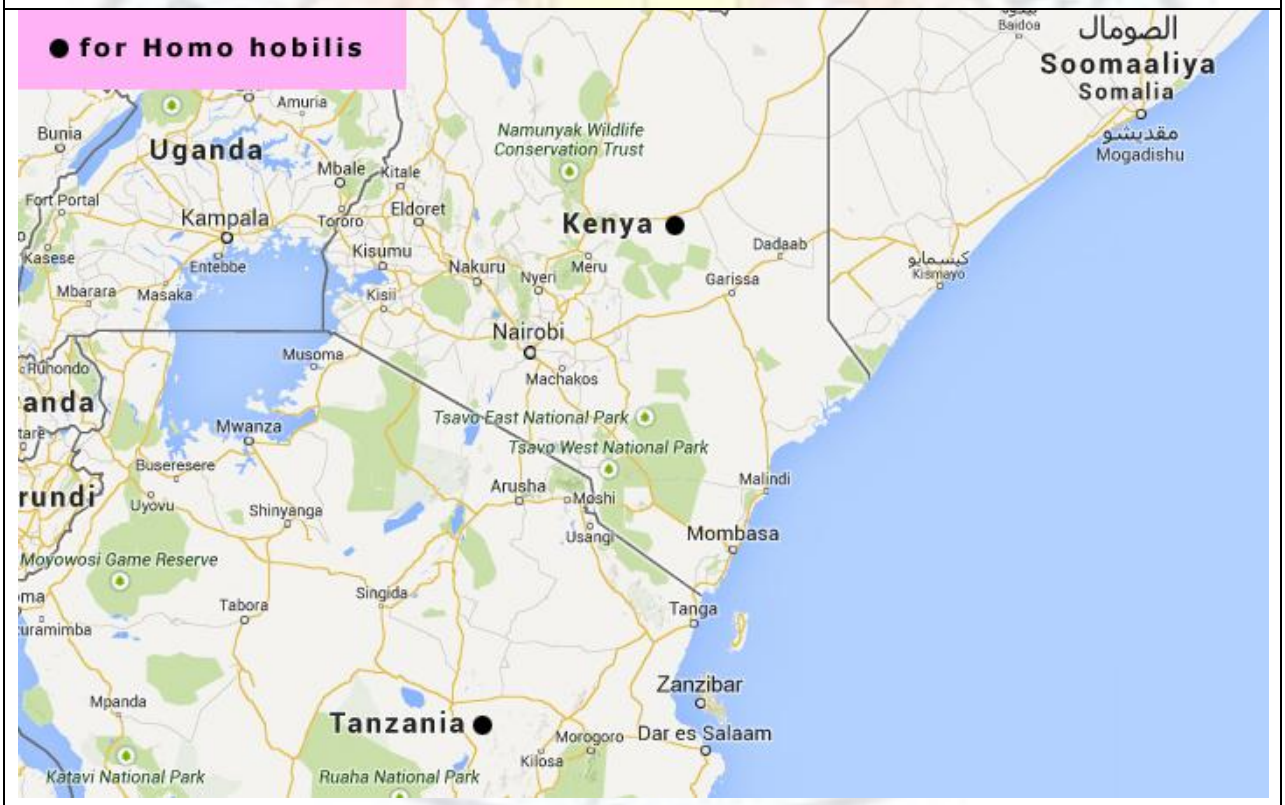
Second last in the line of Australopithecus was the Australopithecus **Robustus** and the last was Australopithecus **Boisei**, but we are told that both come up around the same time. The Australopithecus Robustus evolved and survived between 2-1.5 million years ago and the Boisei evolved and survived between 2.1 – 1.1 million years ago. The Australopithecus Robustus had a body similar to that of Africanus, but had a more large and massive skull and teeth. Its face was flat, with a flatter forehead. Brain size was up to 525 cc but there was still no indication of the ability of speech. The Boisei was almost identical except that it had a more massive face. Some scientists believe that both Robustus and Boisei are variants of the same species. The most recent evidence for Australopithecines has come from Tanzania at sites located in the Olduvai Gorge and from Ethiopia at Omo valley and Hadar. They became extinct due to competitive exclusion and natural selection.

Despite a large number of anatomical changes in the Australopithecus species, their brain size (450 – 550 cc) was not very different from the apes. Increase in cranial capacity occurred some 1 – 1.1 million years ago when we are told that the canines reduced in size, the lower jaw became lighter and the bones of the upper part of the skull also became lighter. The increase in brain size is noticed in the 'homo', which is distinguished from the Australopithecus due to its large brain size. The first in the 'homo' series, the **Homo Habilis** marks the beginning as the 'handy man' in pre-history. Homo habilis was called the handy man because primitive tools have been discovered with his fossil. . He has been termed as the first tool maker. Mary Leaky obtained its fossils from rocks of Olduvai Gorge in east Africa and Richard Leaky from east side of Lake Turkana, Kenya.

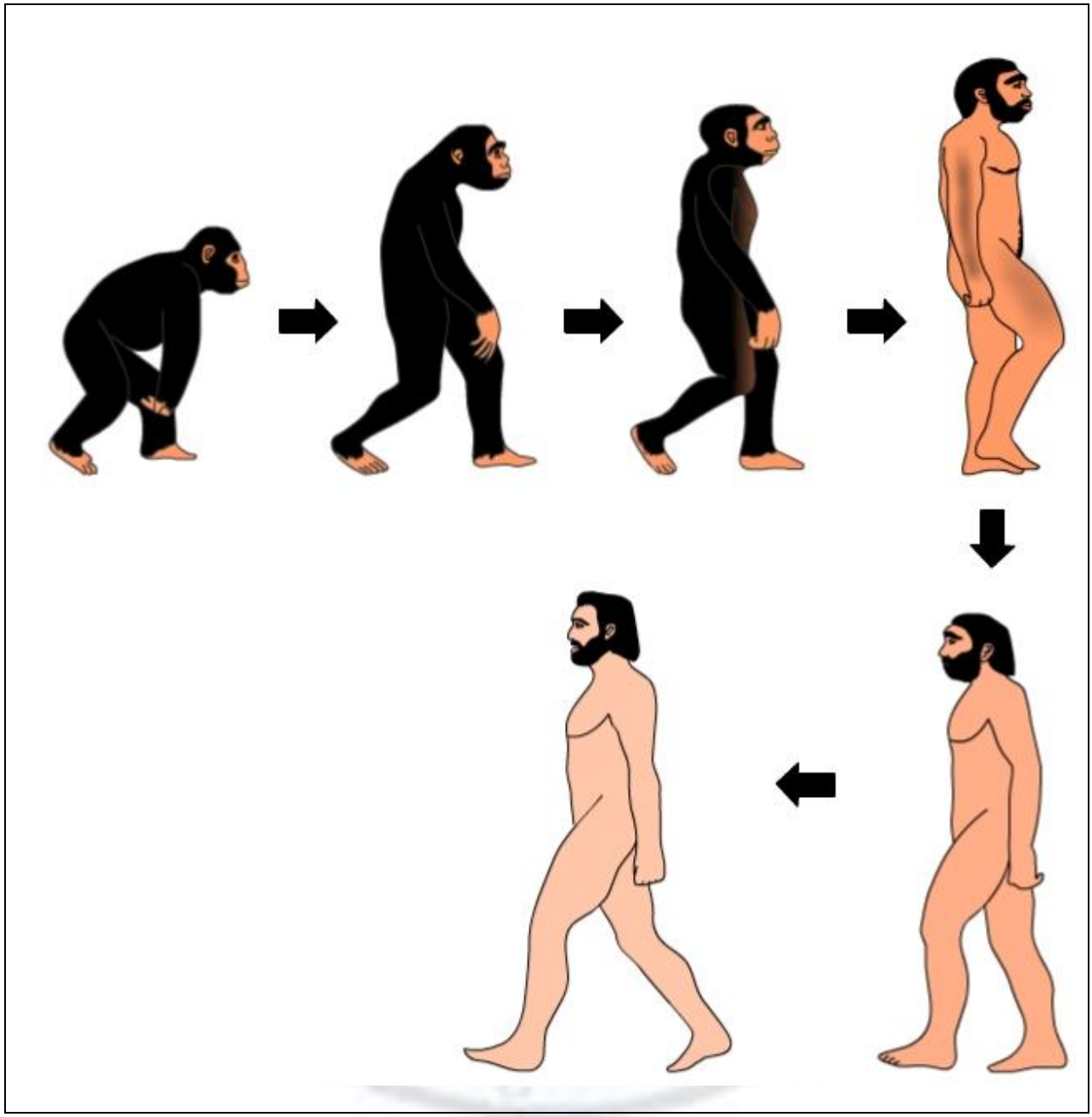
Homo habilis had a larger brain size than the Australopithecus and looked less ape like. It had a crested skull (i.e. layered) with cranial capacity of 700-800cc. Apart from a large brain in contrast to earlier species Homo habilis had a highly specialised hand with a mobile thumb and gripping power. Australopithecus lacked some of these prerequisites to make tools. Homo habilis we are further informed walked straight with bipedal locomotion. According to scholars this was a definite characteristic of mankind from Homo habilis onwards. Although not upright, its complete bi-pedalism has been established by the excavations at Awash, Hadar and Laetoli sites in Africa. Homo habilis had a protruding face, held high from the spine, with a slightly curved body. Its molars were narrow and it also possessed pre-molars. As a further characteristic, Homo habilis remained terrestrial and lived in caves in small group formations. They had begun hunting for meals. Homo habilis

was thus tool making hunter gatherer. They returned habitually to places where they cached stone implements and processed carcasses. The caves we are told were at great distance from their food supply and the food was thus carried to the 'living floors' inside the caves where Homo habilis carried on his activities. Evidence of his stone tool manufacture has been found at Olduvai Gorge in Africa and hence their tool culture has been named **Oldowan**. The earliest stone tools made by habilis were extremely crude and rudimentary. The tools were small in size and often made from pebbles. A small piece of stone would be hit with another stone to manufacture a tool and the one selected would be used. These were crudely chipped stones, flakes, choppers, scrapers and cutting tools. We are told that Oldowan stone tools were multifunctional and were used mainly for cutting plant roots, breaking nuts etc. When used for hunting, these tools were used for skinning the meat of small animals and for extracting bone marrow. Homo habilis may have also discovered fire but was unable to tame it and he was incapable of articulate speech. It lived 1.8 million years ago and is synonymous with lower paleolithic age.

Did You Know



Homo erectus



The Homo habilis was followed by the **Homo erectus** who lived between 1.8 million and 300,000 years ago. It is postulated that Homo erectus was a mobile species and he radiated to different parts of the world. It was the first hominid to spread throughout the world. His remains have been found at Olduvai Gorge in Africa but also to far flung areas such as Java, China, Algeria, Germany, Hungary and India. It therefore adapted to different environments. The Homo erectus was prehensile, had a straight upright back and a cranial capacity of about 1000 cc. His lower jaw was heavy with huge molars, thick brow ridges and

no chin. His head and face therefore differed from modern man. But his limbs, neck and pelvic girdle resembled that of modern man and because of this evolutionary characteristic he had very sharp locomotive skills. His fossil remains show smaller build than modern man but well proportioned. By the time Homo erectus emerged, hunting had become well established.

We are told that Homo erectus was able to control the use of fire. This was a turning point in the cultural evolution of human kind. The sites in East African like Olorgesaille in Kenya show some possible evidence that fire was utilised during Homo erectus's time. Here a hearth like deep depression exists. Then burnt bones dating to this period are found in the Awash valley. This interpretation can also be made on the basis of sites such as Zhou-gao-dian (Chow-kao-tien) caves in China where blackened bones, burned chipped stone artifacts, charcoal deposits, ash remains have been found near to the sleeping quarters. In South Africa burnt bones were found among the tool fossils of Homo erectus. In Europe the Spanish sites of Torralba and Ambrona show remains of burnt charcoal and wood. Fire was used for cooking, for removing poisonous substances from plants, for scaring away animals and for keeping warm

Did You Know
The tool culture which developed with Homo erectus is called **Acheulean**, named after a site in France, Saint-Acheul, where the first examples of Homo erectus tools were identified. Acheulean

. Acheulean tools, as compared to Oldowan tools, were more advanced. These were mostly made of stone but were supplemented by the use of bone, antler and wood used to shape stone tools. The primary Homo erectus innovation is Acheulean hand axe. The hand axe was pear shaped, pointed at one end and broad at the other. It was the most prominent core tool classified as an all- purpose skinning tool and meat chopper and a disc to be thrown at animals while hunting. To make these, the stone was worked symmetrically and on both sides. For this reason Acheulean hand axes are also known as biface tool. The ability to make the tools in a symmetrical fashion has made some scholars to conclude that Acheulean tool makers possessed ability to use language, improved communication and social interaction.. In any case the ability to create hand axe indicates a higher intelligence level than in other species. Other Acheulean tools include retouched flakes, scrapers, chopping tools which were meant for multi-use for e.g. butchering animals, digging roots, cutting wood or animal carcasses or scraping hides. Homo erectus tools are found in association with butchering of large game such as elephants and rhinoceros. To kill such large animals would have required social mechanism of co-operation and communication. The caves and areas where Homo erectus made tools have been called 'chopper chopping complexes'. The Acheulean tools were also standardised and were made according to a repeatable hammering pattern. The tool forms were such that they seemed to have imposed a predetermined 'design on the stone'. This represents more accumulated experience. The Acheulean tools have been found in Africa. Their use spread to Asia across Anatolia, to Iran, Pakistan, to India and beyond. In Europe their users spread it to the western Mediterranean

regions for e.g. France, Germany and also to Britain. Thus it is evident that wherever Homo erectus went they carried their tool making technique with them and handed it down from generation to generation for more than a million years.

As they spread to different parts of the world, Homo erectus tried to adapt to their specific environments in different ways thereby introducing variations in tool techniques. In some parts of North-West Europe core and flake tools were manufactured. These are said to be contemporaneous to Acheulean tools. Thus developed the **Clactonian** culture. Clactonian culture is named after a site close to Clacton – on –Sea in Essex, England. The sites on the riversides like Swascombe in England also seem to have been especially favoured by Clactonian people. The Clactonian culture existed, according to scholars, with early Acheulean as handaxes in Clactonian culture are absent. Some scholars believe that the two industries were distinct, while others maintain that both types may have been made by the same people and that in Clactonian hand axes are absent as they were not needed for tasks carried out in a particular site. We are told that Clactonian tools were predominantly turtle shaped and were found in other areas as well, for example Soan industry in Pakistan and several sites in eastern and southern Africa. In France and Israel similar Clactonian tools have been excavated. Small number of biface tools alongside the non-biface Clactonian deposits have been found in Lower Gravels of Swascombe's Clactonian sites. According to scholars the site represents a generalized technology and date to around 400,000 years ago. Some scholars postulate that Clactonian and Acheulean tool makers would have had cultural contact with each other.

Another tool technique that appeared in the late stages of the Acheulean (lower paleolithy) is known as **Levallois** culture. It is named after the Levallois suburb of Paris in France. It's the name archeologists have given to a distinct flint knapping technique which makes it the part of Acheulean assemblages. What this means is that people did not abandon large bifaces when they started making Levallois flakes. The flake stone tools were more uniformly thick and could be re-sharpened and reused. The tool culture was characterized by a distinctive method of striking off flake tools from a prepared stone core. In this technique large, sharp flakes were struck from the core with a single blow and could be used possibly for skinning and butchering. The Levallois tool culture comprised scrapers and projectile points. These were manufactured across Europe, West Asia and Africa as early as 300,000 years ago. Later refinements to the Levallois technique formed the basis for the Mousterian technology. The Levallois technique is thought to have been used by **Neanderthals** in Europe beginning about 250,000years ago and then perfected during the **Mousterian** culture of 100,000 years ago (middle paleolithy).

Emergence of Homo sapiens

The transition from Homo erectus to Homo sapiens took place around 300,000 - 250,000 years ago. The sites where the transition was detected are Swascombe, England and Steinheim, Germany. Both Swascombe and Steinheim are referred to as sub-species of Homo sapiens. At both sites the skull found had cranial capacity similar to Homo erectus but the teeth structure matched that of the Homo sapiens. This means that genetic evolution was taking place. Homo erectus became extinct nearly 400,000 years ago and in its place a new species emerged – **Neanderthals** named after the site Neander valley in Germany**.** Its

fossils have been found over a large area in Europe and west and central Asia. According to scholars Neanderthals possessed an enlarged brain capacity of about 1450cc, comparable to modern humans. It walked upright but in a crooked manner because it had heavy lower limbs. Other anatomical changes indicate that it had an enormous jaw, retreating forehead and was chinless. Some scholars consider Neanderthals to be an aberration in the evolution process because they became extinct very fast and were replaced by modern humans who moved into their habitat. Other scholars emphasize the continuity in the origin of mankind through this species. Whatever the argument, one thing is certain that they did exist and perhaps became a hybrid species with Homo sapiens. We are told that Neanderthal fossil remains found in Palestine exhibit traits of a faint chin i.e. chin not fully formed – pointing to a mixed form of Neanderthals and Homo sapiens. But Neanderthal started disappearing very fast. Anthropologists figured that climatic factors or competition from modern humans were the likely causes for their extinction.

The Neanderthals evolved as hunter – gatherers, hunting large animals like elephants, mammoth, bison and brown bear. They gathered wild plants for food. Cereal grains have been found stuck between the teeth of several Neanderthal fossils. The hunting reflects on the social set up as hunting of large animals was a co – ordinated group activity. Their habitation sites usually contain large quantities of bones of many different animals. They also exploited marine resources like fish and seals. The species must have provided for the food supply in a large manner. Neanderthals regularly occupied mouths of caves and rock shelters facing the south direction as it provided greater exposure to sun's light and warmth especially during the icy cold winters. But we are told that Neanderthals were not simple cave people, they also created 'open camps' as temporary shelters. There is evidence that they occasionally made enclosures out of mammoth bones.

The **Mousterian** tool culture is linked to the Neanderthals. It is named after the site Le Moustier, Dordogne, France. This industry appeared around 200,000 years ago and persisted until about 40,000 years ago. The species adapted to Levallois technique which required preliminary shaping of the stone core from which the blade and triangular flakes were struck off. Howwever more specialised shapes evolved as Mousterian technique developed to include cutting tools like notched flakes, flake blades, flake points, flake knives and scrapers. Tools were also combined with other components like wood handles. Mousterian flake knives were used for cutting small pieces of wood and butchering animals. Flake scrapers were important in processing animal skins. Stone tips were fixed to spears, more effective in killing large animals. This was the new weapon created by Neanderthals. Biface core tools such as hand axes continued to be made in the Mousterian tradition. It is suggested that Mousterian craftsmen used hammers of bone, antler and wood in the final stages of shaping a tool.

The cultural index of Neanderthals indicates that they buried their dead in shallow graves into the soil of their living areas at the mouth of caves and rock shelters. They believed in rituals. In nearly half of the Neanderthal burials stone tools and animal bones were found deposited in the graves. In the case of a burial in Shanidar caves, Iraq, there was an elaborate ritual activity as flowers were found sprinkled on the corpse of a man. Sometimes the burial patterns show particular positioning of the dead and in some cases very strong stones have been placed on top of the bodies. Other burial types show bodies buried one on

top of another showing perhaps a family burial. Neanderthals also buried the heads of bears in the caves in west Europe. In southern France for example Neanderthal burials show rectangular pits, lined with stones and having at least 20 buried bear skulls. This may have been linked to a supernatural belief that would lead to the multiplication of the hunt. The arrangements in the burials suggest that some kind of rites were performed perhaps in the hope that there is life after death. In any case this reflects on the acceptance of the phenomenon of death indicating a much higher evolution of human sensibilities. The Neanderthal population like other species began to dwindle about 50,000 years ago and became extinct with the beginning of upper paleolithy around 35,000 years ago.

Coming of Homo sapiens sapiens

A new species Homo sapiens sapiens, better known as modern humans, evolved around 125,000 years ago and by 35,000 years ago they had replaced Neanderthals. With this the evolutionary pattern gave way to the emergence of upper paleolithy. Large cave shelters with numerous fossils of this species have been found in south – west Europe, Alpine valleys, Spain, France and tropical Africa. There were significant changes seen in their settlement patterns. They lived in bands in large territories which were exploited seasonally. We are told that they kept returning to the same sites seasonally. Instead of living a nomadic life they continued to reside close to lakes and rivers by taking shelter in the caves which were located near to water resources. Greater use of the rock shelters also began. In south – west Europe, in Spain and France, in the Shanidar, Iraq, caves and rock shelters were constantly occupied. Not only this, open sites close to some water bodies were also habited. These were called 'transit camps'. Homo sapiens sapiens exploited such sites seasonally for food and living. And some 10,000 – 8,000 years ago they became sedentary.

With Homo sapiens sapiens growing refinement in the manufacturing of the tools can be noticed. Different tool making techniques like disc making technique, percussion technique, punching method and trimming technique were used for making tools. The tools found in the Shanidar caves, Iraq, give the evidence of tools made through trimming, punching and percussion methods and at El Tabun, Israel, retouched flakes were found. Wide varieties of tools like large blades, triangular points, discs, scrapers, shafts etc. have been found at other sites. Homo sapiens sapiens developed a specialised wooden kit which included adaptations of earlier tools like Acheulean and Clactonian as well as those tools which they had developed themselves. Further, Mousterian tools such as shafts, spears, scrapers were modified by trimming, punching and polishing techniques. This resulted in the production of 'composite tools' such as a spear whose different parts – point tip, a shaft and a binding – were manufactured separately and then assembled. Gordon Childe refers to the invention of composite tools as specialised because they were complex and were used for specific purposes like wood cutting, skinning hides. This gives evidence of the advancement of scientific or precision techniques, greater decision making ability and perhaps even division of labour through which specialised wood working tools or hunting tools were made. Such tools as mentioned earlier were found at Shanidar caves and El Tabun sites. Tool technology thus witnessed a significant improvement during the period. This facilitated the hunting of a variety of animals including big mammals like the wooly rhinoceros and mammoth.

Value Addition

http://upload.wikimedia.org/wikipedia/commons/6/68/Akha_cropped_hires.JPG

Cultural Practices

Homo sapiens sapiens developed ritualistic behaviour as burials became important and widespread. Burials continued to be in trenches, though in different patterns. Often

implements were dug up along with the corpse in the burials. Alongside the bodies, tools, bones, and even food remains have been found deposited. Burials have been found in especially excavated caves or in particular reserved corners of living caves near to the hearths. Many rites seemed to have evolved like placing bodies in a particular direction, generally west. In the French sites bodies have been found sprinkled with red ochre powder. In some burials as in the Dordogne valley, France, individual corpses had stones placed on them. Alpine caves stand as a good example of ceremonial burials. Perhaps there were ceremonial burials of both human and animals. Magic rites associated with burials may have also evolved to ensure continuity of plentiful game and ensuring animal supply in abundance. Historians also conjecture that this may have to do with the idea of making the animal spirit disappear to avoid danger from predators. Gordon Childe has termed this sharpening of religious sensibilities as the development of 'ideology'.

Upper paleolithic people were great artists and worked with a variety of materials be it stones, bones, wood or ivory. In Africa and Siberia around 10,000 engraved objects have been found. The people were also skilled at bas relief art and paintings. They were quite advanced as they used paint in the form of natural dyes extracted from plants and flowers. Inspiration for the themes of the art work came mostly from the nature. Paintings depict animals and human like figures. Certain types of animals such as the horse, the bull and reindeer were painted by the Homo sapiens sapiens. However the painted animals had distorted bodies as the artists were unaware of perspective drawings. Two hundred beautiful cave paintings and drawings have been found in Lascaux caves in France and Altamira caves in Spain. Historians remain bewildered by the fact that the paint used in these caves barely faded with time and is still bright. The main colours used include black, yellow, brown and red. In a particular painting called 'The Great Hall of the Bulls', four bulls are sketched in thick black lines and seem to be surrounded by a horse, deer and a small bear thus depicting 'the hunt'. A unicorn like creature is also shown playing with the bulls. Paintings have also been found at cave entrances and are said to have been connected with some kind of magic. The paintings thus had meanings attached to them. They may have meant to give more power or control to hunters who devised hunting strategies. Most historians and art restorers believe that these paintings were sacred as majority of these were located deep inside the dark caves to which only a few members such as the artists may have had access. This also gives evidence of the presence of 'specialists' who did not participate in the hunt but were given a share in the proceeds of the hunt for carrying on their tasks of ritualistic paintings.

Several cultures developed during the homo sapiens sapiens time frame. These were diversified into distinct regional styles. For example the **Chattelperronian**, 40,000 – 34,000 years ago, was reflective of declining European Neanderthals. The **Aurignacian** culture, 40,000 – 28,000 years ago, was associated with art work like ivory carvings, simple paintings and engravings. Their tools consisted mainly of sharpened blades, backed knife blades. The **Gravettians,** 28,000 – 22,000 years ago, are well known for hand paintings and bas relief work. These artists made hand impressions on cave walls. They made Venus figurines. Fertility rituals have been associated with these figurines. Many have been found headless though with prominent feminine forms. Most of these have been found in Dordogne valley, France.Ivory beads turn up in their burial ornaments. Ritual and religion were thus added to human culture. The **Solutrians,** 22,000 – 19,000 years ago, also

indulged in bas relief but of animals especially horses. They made Venus figurines along with bas relief paintings on cave walls. Both Gravettians and Solutrians made backed points and blades. Solutrians added tool designs made possible by heating and suddenly cooling flint stones.Almost 80% of the upper paleolithic paintings and art forms come from **Megdalenian** culture sites, 18,000 – 12,000 years ago. They made Venus figurines, paintings and wall engravings of horses and deer and used antler to do very fine animal bone work on tool handles. Their choice of painting animals is deliberate as if to symbolise something. Symbols such as dots and spaghetti like lines have been painted by them which may be showing some kind of seasonal calendar. The Megdelanians manufactured pressured flake core tools and pressured flake bone tools. Upper paleolithic tool assemblages include end scrapers, burins for working bone and ivory, bone points, ivory beads, tooth necklaces and human figurines. All upper paleolithic people made ornaments from cowrie shells, stones, bones and seeds and bracelets out of ivory, mammoth bones. The ornaments were used as markers of identity because in many cases fossils have been found with ornaments on their bodies. Art, fashion and magic are all rooted in the Stone Age. There is also evidence of some kind of trade between coastal and inland inhabitants particularly among Aurignacians and Megdalenians as shells and sea fish from the Mediterranean coast have been found in Dordogne, France. It is important to note that Africa was no longer the main settlement area as far as upper paleolithic culture is concerned European sites gained more importance.

The lower, middle and upper paleolithy cultures varied greatly from one another, however, one feature remained constant i.e. social organization. Within the bands and even within the larger groups there was collective access to tools and food. Tools have evolved to influence human history. Thus human evolution is not only a biological process it also involves a complex and an elongated process of cultural development.

Summary

1. Concept of evolution of mankind emerged through the writings of Charles Darwin. Later on scholars like Herbert Spencer and Chevalier de Lamarck made significant contributions.
2. 2.The process of evolution occurred over the period of time and could be seen in different spaces.
3. Archeological evidences provide information on the process of evolution of mankind.
4. It was from evolution of primates that modern Homo sapiens sapiens emerged.
5. Clactonian Culture was contemporary of Acheulean culture. Both are named after sites found in Essex, England and Saint-Acheul,France respectively.
6. Modern Humans emerged around 125000 years ago and had replaced Neanderthals.
7. 7.The refinement in tool making over the period of time was part of biological and cultural evolution of mankind.

Exercise/ Practice

Short Questions:

1.Define Material Culture.

2.Write a note on Aegyptopithe.

3.Write a note on Homo erectus.

Long Questions:

1.Trace the various phase in evolution of mankind before the emergence of Homo sapiens sapiens.

2.Why archeological sources are important in constructing early history connected with evolution of mankind.

3.Highlight the dominant features of culture of Homo sapiens sapiens.

4.Dicuss any two sited that have yielded archeological sources connected with evolution of Homo habilis.

Glossary

- Pre historic Culture: Assemblage of the artifacts from specific time and space.
- Survival of the Fittest: Coined by Charles Darvin, it denoted thatin the existing evvironment, variation existed and nature selected the best to survive.
- Geology: It is the scientific study of origins, structure and composition of the earth, sepecially,its rocks.
- Great Ice Age: It denoted the period when ice bagan to recede on the face of the earth and was marked by formation of Mountains,locking of water in the Arctic Circles among other changes.There were five distinct glacial periods.
- Prosimii: denotes lemurs, loroes and tarsiers.
- Anthropoidea:denotes monkeys,apes and humans.
- Acheulean : It defines the tool culture that developed with Homo erectus and was named after a site in France,Saint –Acheul.

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