

# LIFE THROUGH THE AGES

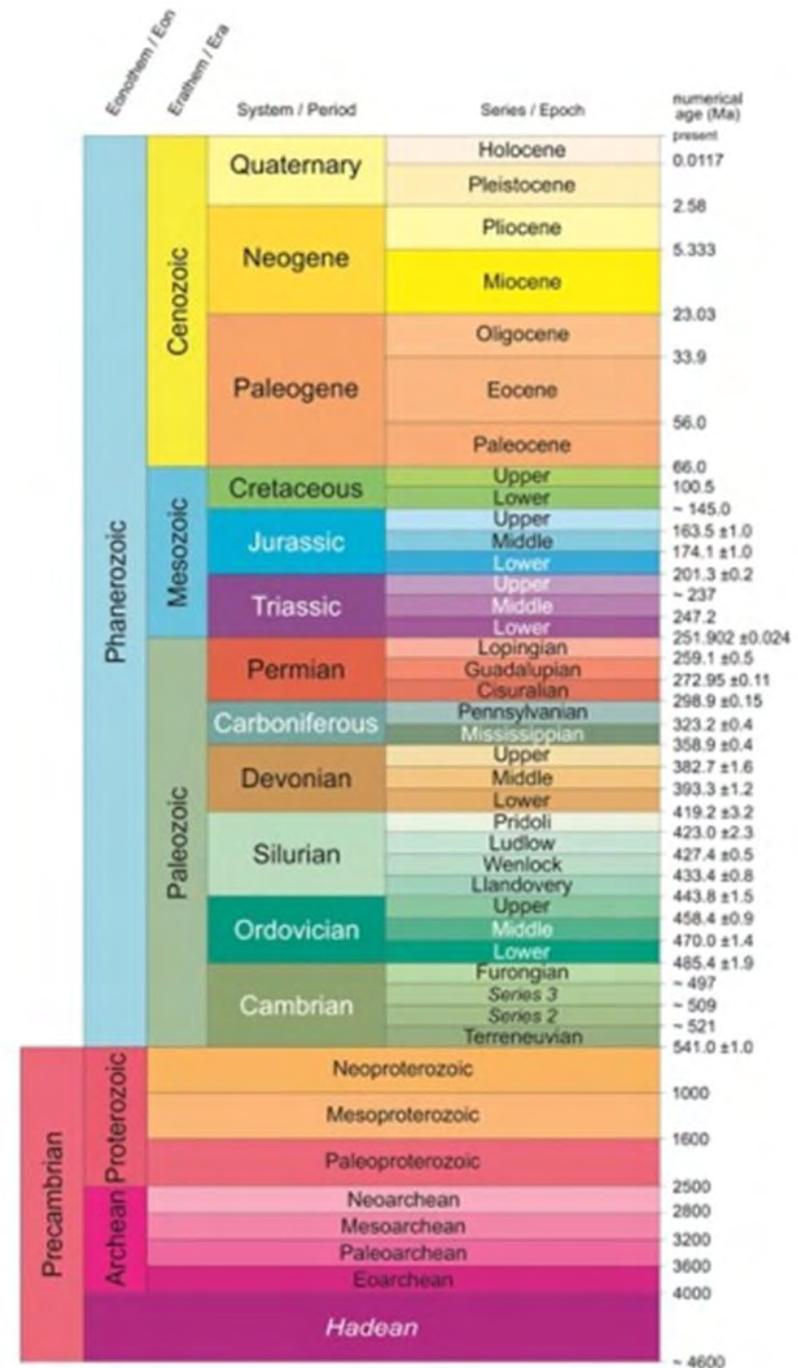
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# Geological Timescale of events

- Time line of Earth's History
- Breaks down Earth's history into units of Time

## How geologic time is divided: Giving Time a Name

- The largest sections are called 'eons'
- 'Eons' are divided into 'Eras'
- 'Eras' are divided into 'Periods'
- 'Periods' are divided into 'Epochs'



# PANORAMA : LIFE THROUGH THE AGES

## A WALK THROUGH TIME

What is a Panorama? A PANORAMA is any wide-angle view of physical space.

- Life through the ages provides an insight on how the Earth and then life on it has evolved.
- Based on Geological Timescale the Panorama is divided into 16 sections, demonstrating major events from Big Bang, origin of Life, Multi-cellular animals / plants/ Dinosaurs and prehistoric man to modern man through 2D, 3D models, Background Painting/ Printing along with landscaping providing wide angled and depth view of the event.

# SECTION – I

## ORIGIN OF THE SOLAR SYSTEM

### The Hadean

- It is currently believed that the big bang created the cosmos and the galaxies within it around 15 billion years ago leading to the formation of the Sun and planets including earth.



# SECTION II

## ORIGIN AND EARLY EVOLUTION OF LIFE

Divided into two parts: Archean and Proterozoic

### □ The Archean (3600 m.y. - 2500 m.y.)

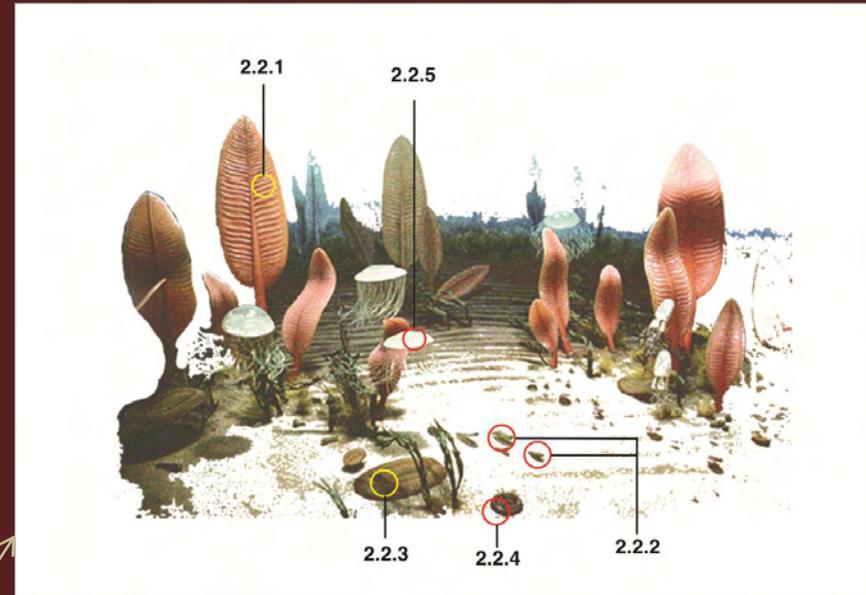
- Life arose on Earth
- Oldest fossils :Cyanobacteria
- Cyanobacteria formed large layered structures, called stromatolites (more or less dome-shaped) or oncolites (round). They still survive in restricted areas of planet Earth.
- The Earth's heat flow was nearly three times higher than what it is today

### □ The Proterozoic Era (2500 m.y. - 542 m.y.)

- means 'early life'.
- single- celled and more advanced multicellular organisms began to appear
- origin and first diversification of soft-bodied organisms collectively known as the 'Ediacara fauna'. It is known so after the Ediacara Hills of southern Australia.



A stromatolite



2.2.1: *Charniodiscus*

2.2.2: *Spriginnia*

2.2.3: *Dickinsonia*

2.2.4: *Tribrachidium*

2.2.5: Jelly Fish

2.1.2 **Stromatolites**

2.2.0

# Section III

## Origin and evolution of early multicellular life

Divided into three parts: Cambrian, Ordovician and Silurian

### ❑ Cambrian(542 m.y-488 m.y)

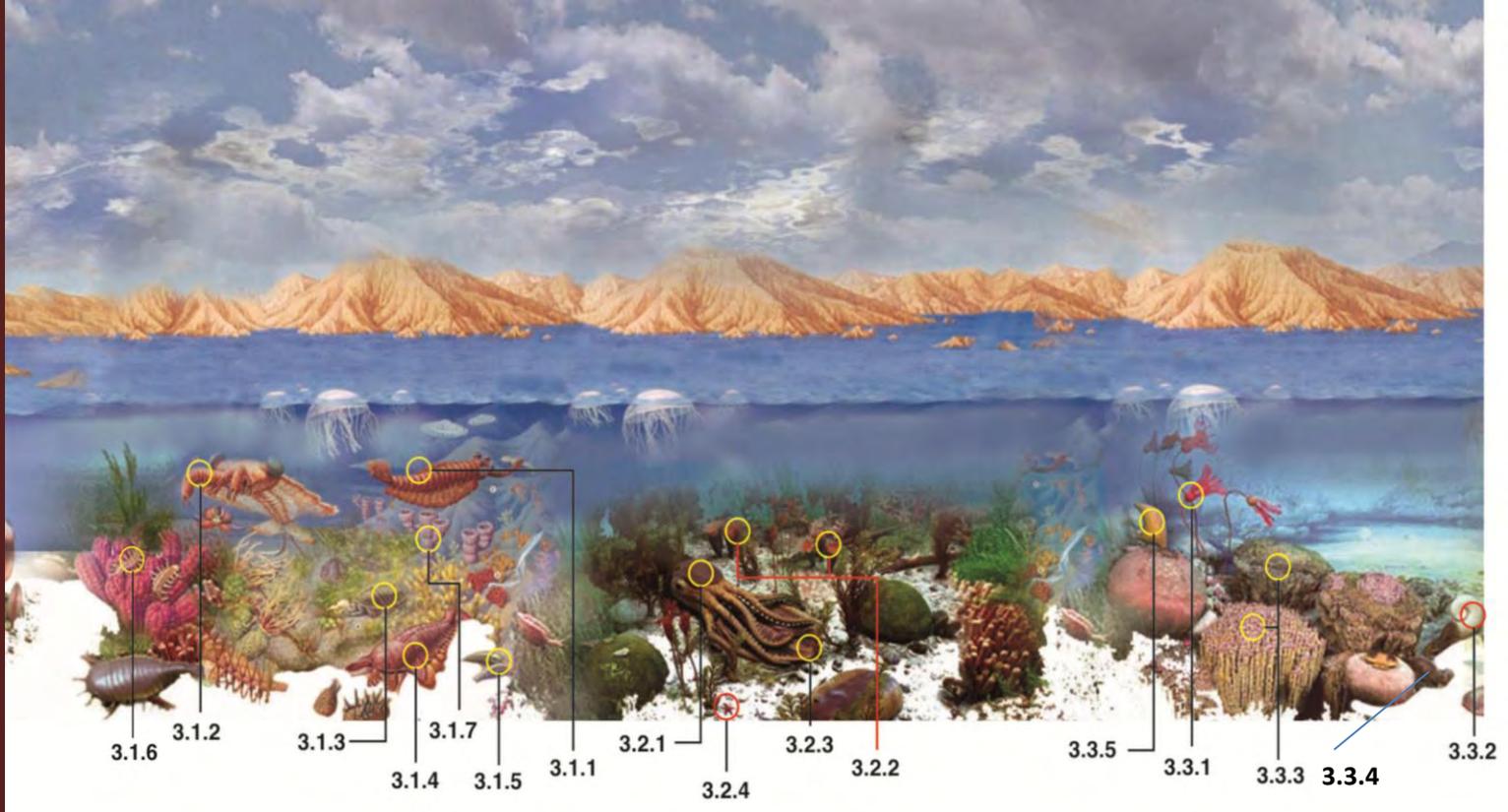
- Sudden diversity of life in the seas.
- First animals that developed optical lenses.
- Trilobites, Green and red algae as well as sponges, gastropods, and segmented worms appeared.

### ❑ Ordovician(488 m.y-443 m.y)

- Diverse marine invertebrates, including graptolites, trilobites, brachiopods, and the conodonts (early vertebrates) plus red and green algae, primitive fish, cephalopods, corals, crinoids, and gastropods.

### ❑ Silurian(443 m.y-416m.y)

- First land plants appeared.
- Multicellular life diversified.



## Cambrian Sea

- 3.1.1: *Opabina regalis*
- 3.1.2: *Anomalocaris*
- 3.1.3: *leanchoilia*
- 3.1.4: *Sanctacaris*
- 3.1.5: *Alalcomenaeus*
- 3.1.6: *Ashyeaia*
- 3.1.7: *Vauxia gracilentia*

## Ordovician Sea

- 3.2.1: *Endoceras*
- 3.2.2: Rugose corals
- 3.2.3: *Isotelus*
- 3.2.4: Starfish

## Silurian Sea

- 3.3.1: Crinoids
- 3.3.2: Bilmorites
- 3.3.3: Rugose corals
- 3.3.4: Brachiopods
- 3.3.5: *Platyceras*

# SECTION –IV

## INVASION OF LAND BY PLANTS AND ANIMALS

### □ Devonian(416 m.y-369 m.y)

- ‘The Age of Fish’. A time of great transition.
- In the sea, ammonoids and fish evolved and quickly diversified.
- On land trees and forests appeared for the first time.
- first insects, spiders and tetrapods evolved.
- Seed-bearing plants(Gymnosperms) appeared

*Tiktalik rosae*



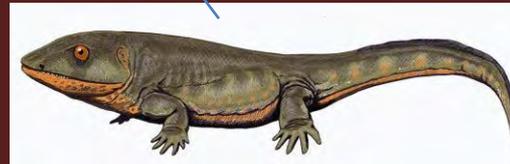
# SECTION –V

## MAJOR COAL DEPOSITS

### Carboniferous(359 m.y-299 m.y)

- First extensive forests on earth.
- Dense and swampy forests, which gave rise to large deposits of peat which later turned into coal.

*Pederpes*

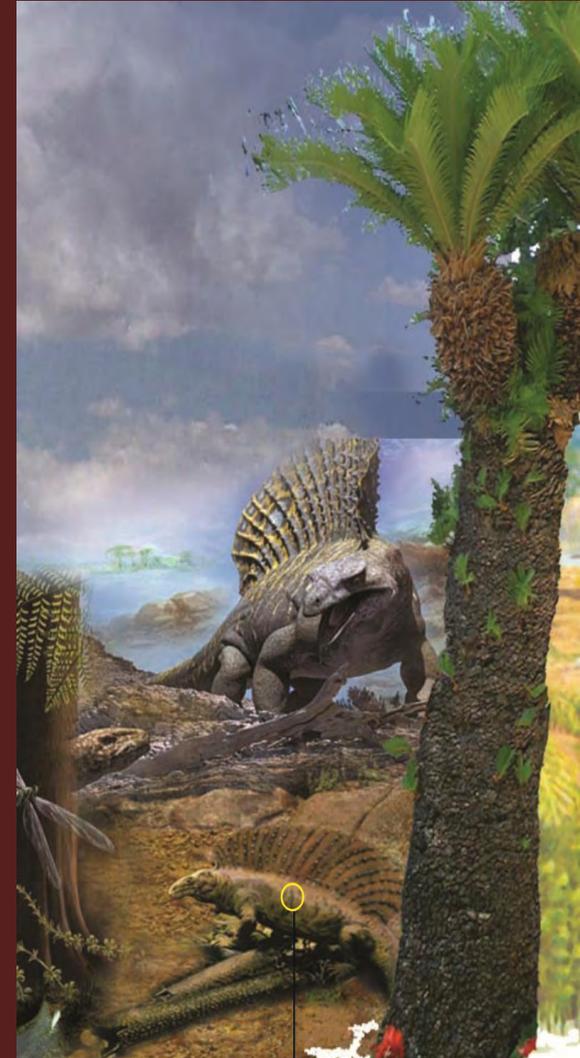


## SECTION –VI

### MAJOR EXTINCTION OF PRIMITIVE LIFE

#### □ Permian (299 m.y-251 m.y)

- Great changes in the Earth's climate and appearance.
- Extinction of Trilobites and other marine groups
- a group of small reptiles (Diapsids) abound. These were the ancestors to most modern reptiles and the ruling dinosaurs as well as Pterosaurs and Crocodiles.
- Thriving also, were the early ancestors to mammals (Synapsids), which included some large reptiles such as *Dimetrodon*.



*Dimetrodon*

# SECTION –VII

## ORIGIN OF DINOSAURS



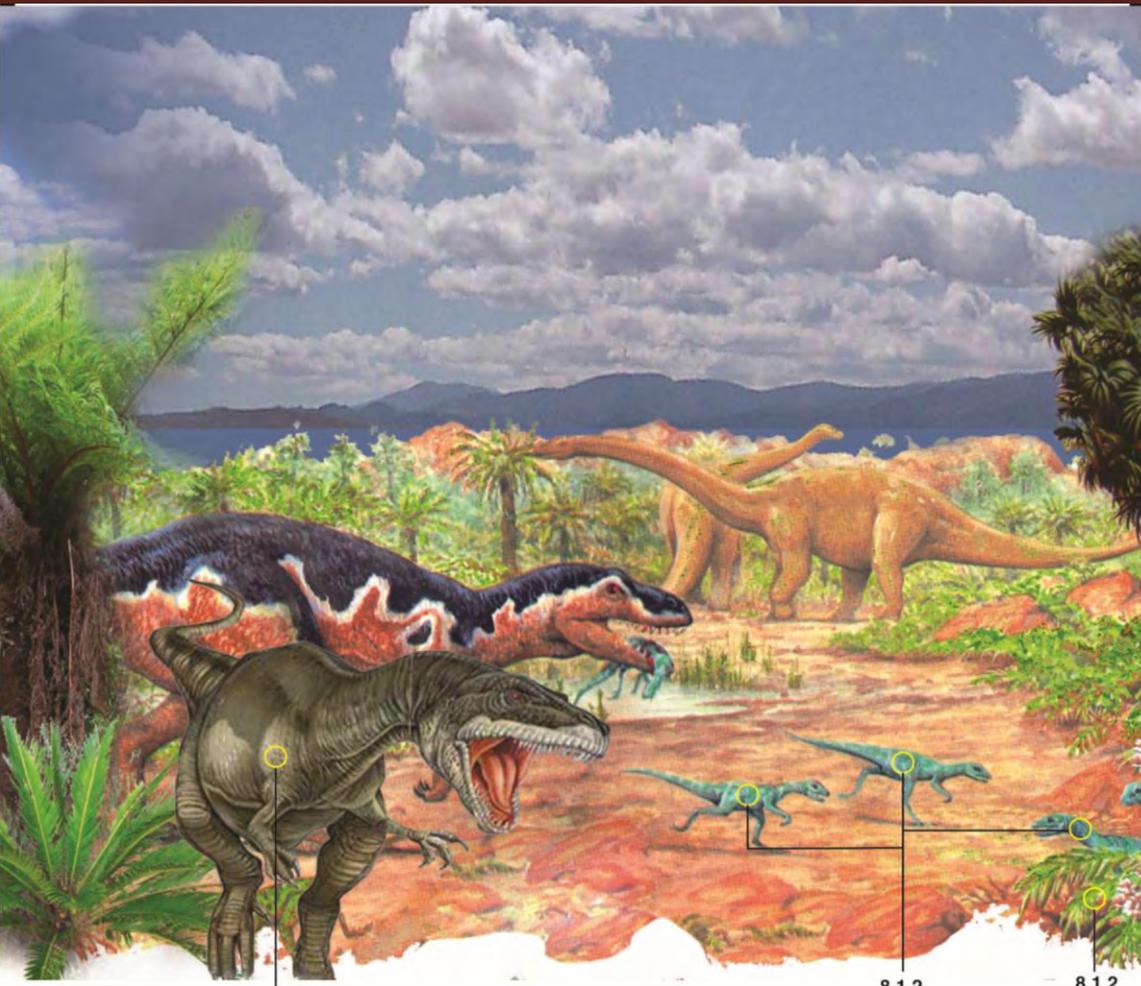
### □ Triassic(251 m.y-199 m.y)

- Evolution of Dinosaurs
- Plants, Conifers and Cycads were dominant.

# SECTION –VIII

## DINOSAURS ATTAINED GIGANTIC SIZE

□ Jurassic(199 m.y-145 m.y)



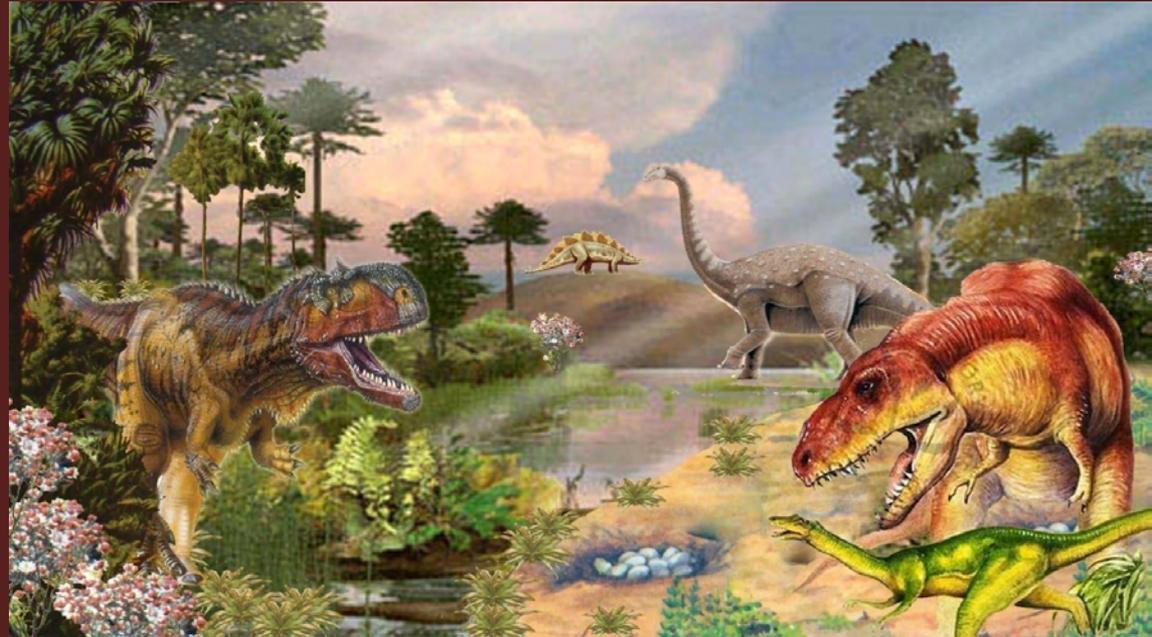
- The Age of the Ruling Reptiles.
- Vegetation was greener and more lush.
- By Late Jurassic, huge dinosaurs walked the land.
- Flying reptiles ruled the skies.
- Earliest known birds also appeared.

# SECTION –IX

## DINOSAURS BECAME EXTINCT

### □ Cretaceous(145 m.y-65 m.y)

- Life occupied the air, the land and the sea but lost over 70 percent of it in a catastrophic extinction.
- India was a part of Gondwanaland with a thriving plant and vertebrate community.
- *Rajasaurus* was the dominant dinosaur.



# SECTION -X

## RISE OF MAMMALS

### □ Early Cenozoic(65 m.y-23 m.y)

- The 'Age of Mammals'.
- Invertebrates, fish, reptiles were essentially of modern types, but mammals, birds, protozoa and flowering plants still evolved and developed during this period.



# SECTION -XI

## ORIGIN OF APES AND OTHER LARGE MAMMALS

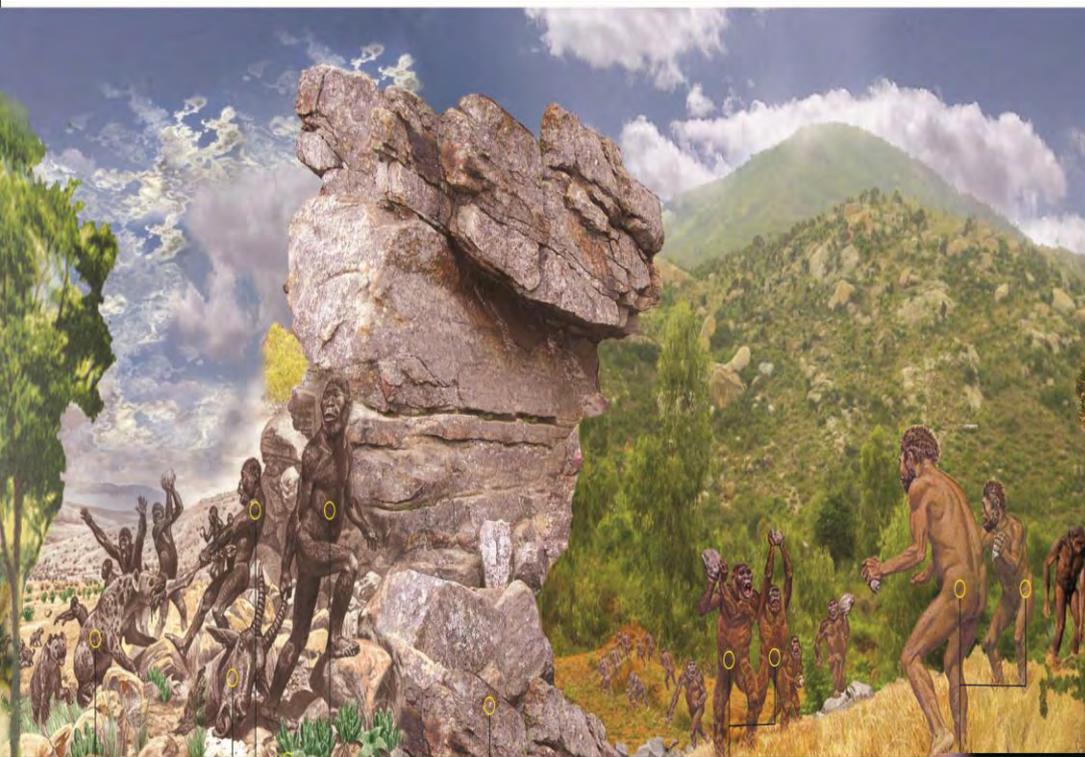


### □ Miocene(23 m.y-5 m.y)

- Open woodlands and grasslands became abundant
- Further evolution of horses, camels, rhinos and anthropoid apes, including the *Dryopithecus*.
- The first deer and giraffes appeared, along with the first Hyenas.

# SECTION –XII

## EVOLUTION OF MAN LIKE ANCESTORS



### ❖ Australopithecines

- Diminutive and gracile, usually standing no more than 122-137.2 cms ((about 4 ft – 4'6"') tall.
- Made tools as well as used them effectively.
- Ground dwelling and were hunter, gatherers and scavengers .
- Also indulged in gustatory cannibalism (Ate other men)

# SECTION –XII

## EVOLUTION OF MAN LIKE ANCESTORS



- ❖ **Face To Face-Advanced Australopithecines And Paranthropus**
- *Paranthropus* represented an evolutionary dead end in man's ancestry.
- 131.1-137.2 cms tall.
- A vegetarian to judge from his big jaws and grinding teeth, he competed with advanced Australopithecines, which may have hastened their extinction

# SECTION- XIII

## ASCENT OF EARLY MAN-

### *Homo habilis* and *Homo erectus*



# SECTION- XIII

## ASCENT OF EARLY MAN-

### *Homo habilis* and *Homo erectus*

#### ❖ *Homo habilis*-

##### **The Handy Man**

- Represents one of the earliest stages of modern man evolution.
- First to use tools.
- Only 137.2 cms ( 4'6" ) tall
- Hunted game and scavenged fat-rich marrow from bones.
- Did not stay in one place very long, but were always on the move, in search of food.

#### ❖ *Homo erectus*-

##### **The First True Humans**

- Tall and erect.
- Stood about 5.8-5.10 feet tall and were stronger than modern humans.
- Cave dwellers and the first hominids to use fire.

## SECTION- XIV

### MODERN MAN EVOLVES-EARLY *Homo sapiens*



- Brain larger than *H. erectus* and smaller than that of a modern human.
- Advancement of tools like hand axe.
- Hunting style of life
- Meat was a higher percent of their diet.

# SECTION –XV

## FIRST BURIAL-NEANDERTHAL MAN

- The first fossils discovered in the Neanderthal valley in Germany in 1856.
- The males stood about 167.6 cms(5'6") and females stood about 155.4 cms(5'1").
- Mastered the technique of fire making .
- Capable of big game hunting .
- First to bury their dead.



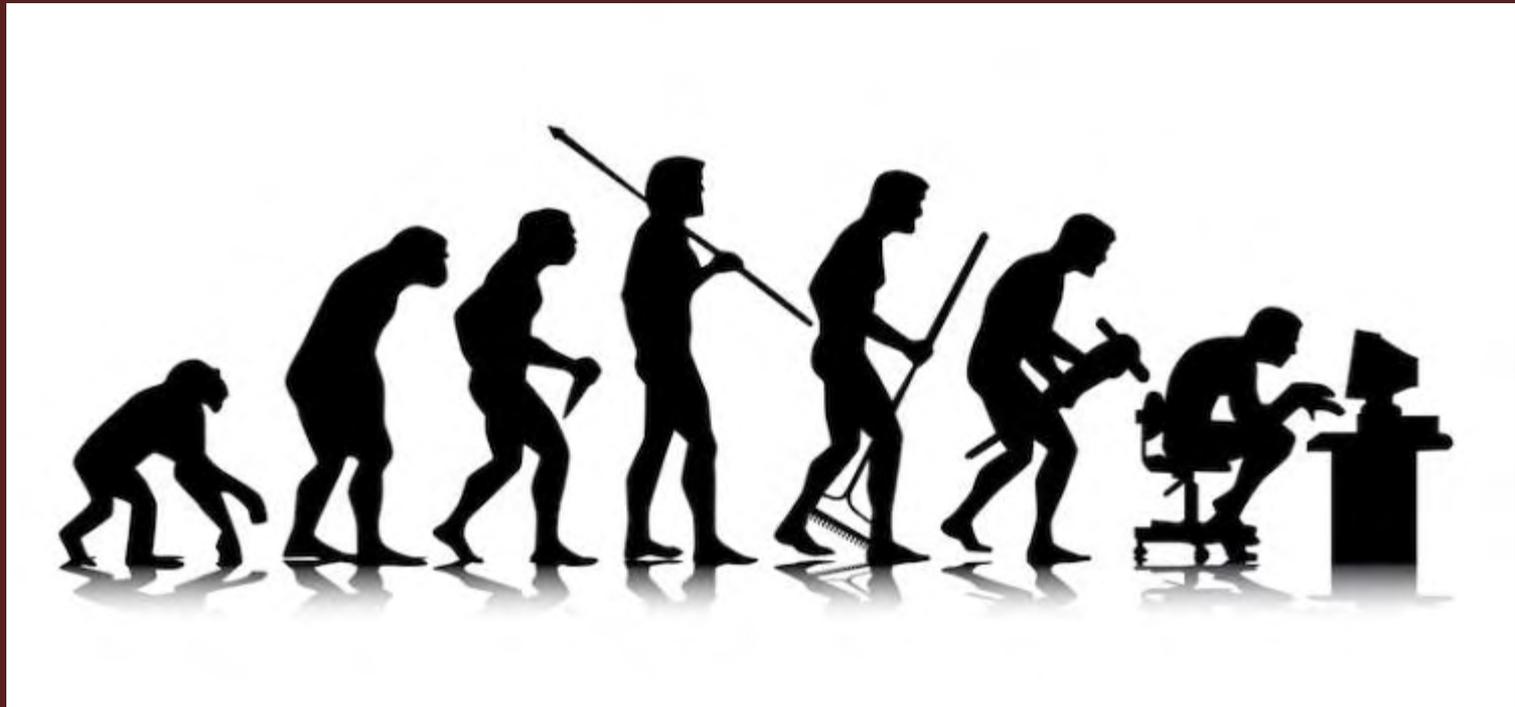
# SECTION VI

## APPEARANCE OF ART- CRO-MAGNON MAN

- The first remains found in Europe in 1868
- Evolution of art and technological innovations remained apparent.
- Used paints composed of manganese and iron oxides to paint the walls and ceilings of their caves.
- Invented the spear thrower, made warm clothes, pendants and necklaces from ivory beads and shells , lived in groups in one place, developed communities or villages and planted seeds and raised animals for food.



And the Evolution Continued.....



**THANKS**



PUSHPA GUJRAL SCIENCE CITY, KAPURTHALA