

## ★ Age Determination of Fossils

- Fossils are mostly contained in stratified or sedimentary rocks.
- These rocks contain various radioactive elements.
- Some important method of dating/determination of fossils are:

### (1) The Lead-Uranium Ratio Method (Boltwood - 1907)

- Radioactive elements radium, uranium and thorium are found in a very small quantities in earth's crust.
- Uranium 238 slowly disintegrated into simpler and to produce lead 206 and helium.
- The rate of disintegrated is constant and is not influenced by changes in temperatures, pressure and chemical conditions.
- If the ratio of the radio-active lead to the uranium is known then the age of rock can be calculated by the formula:

$$T = \frac{L}{U} \times 7,600,000,000 \text{ (After 1952)}$$

T = Time in years.

L = Quantity of lead in gram.

U = Quantity of uranium in grams.

## (2.) Radio-Carbon Method (W.F. Libby)

- In all living beings a constant amount of  $C^{14}$  (isotope of Carbon) is present.
- After death of the organism the  $C^{14}$  gradually disintegrates into  $C^{12}$  (normal Carbon) at a constant rate.
- The half-life period of  $C^{14}$  is about 5,568 years.
- For dating of a fossil, the amount of  $C^{14}$  present in the sample is measured and compared with the same present in most living specimens.

## (3.) Potassium Argon Method

- It has recently been developed and by this method the accurate age of the fossil can be determined.
- The half-life period of radioactive potassium is 1,300,000,000 years.
- Thus the modern methods of dating of fossils has enabled us to calculate their accurate age and know much about the past of earth.
- The significance of fossils has been greatly enhanced by the modern dating methods.