**The Story of Carbon Dating**

Radio carbon dating determines the age of ancient objects by means of measuring the amount of carbon-14 there is left in an object. A man called Willard F Libby pioneered it at the University of Chicago in the 50's. In 1960, he won the Nobel Prize for Chemistry. This is now the most widely used method of age estimation in the field of archaeology.

**How it works**

Certain chemical elements have more than one type of atom. Different atoms of the same element are called isotopes. Carbon has three main isotopes. They are carbon-12, carbon-13 and carbon-14. Carbon-12 makes up 99% of an atom, carbon-13 makes up 1% and carbon-14 - makes up 1 part per million. Carbon-14 is radioactive and it is this radioactivity which is used to measure age.

Radioactive atoms decay into stable atoms by a simple mathematical process. Half of the available atoms will change in a given period of time, known as the half-life. For instance, if 1000 atoms in the year 2000 had a half-life of ten years, then in 2010 there would be 500 left. In 2020, there would be 250 left, and in 2030 there would be 125 left.

By counting how many carbon-14 atoms in any object with carbon in it, we can work out how old the object is - or how long ago it died. So we only have to know two things, the half-life of carbon-14 and how many carbon-14 atoms the object had before it died. The half-life of carbon-14 is 5,730 years. However knowing how many carbon-14 atoms something had before it died can only be guessed at. The assumption is that the proportion of carbon-14 in any living organism is constant. It can be deduced then that today's readings would be the same as those many years ago. When a particular fossil was alive, it had the same amount of carbon-14 as the same living organism today.

The fact that carbon-14 has a half-life of 5,730 years helps archaeologists date artifacts. Dates derived from carbon samples can be carried back to about 50,000 years. Potassium or uranium isotopes which have much longer half-lives, are used to date very ancient geological events that have to be measured in millions or billions of years.

Check out this video on how Carbon dating works:

* http://www.youtube.com/watch?v=phZeE7Att\_s