

Who First Knew the Earth was Round?



Carahunge Observatory, 5,500 B.C.

Carahunge, near Sisian in Armenia, is a 7,500-year-old stone circle. Astronomers used it to mark the movements of the sun, moon and stars. The Ancient Armenians understood that the earth was round and that it rotated on its own axis.



Who Said the Earth was Flat?

While the scholarship of the Armenians did not spread everywhere, **there is no evidence that any sensible person ever believed the earth was flat.**

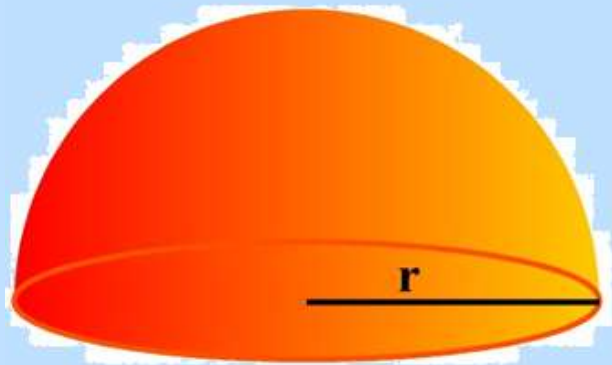
As long as people have been able to write – for six thousand years – they have described the world as a **dome** or an upside-down bowl.



Did people once believe that this could happen? Perhaps, but only in the sense that they might reach the bottom of the dome – not the edge of a flat table.

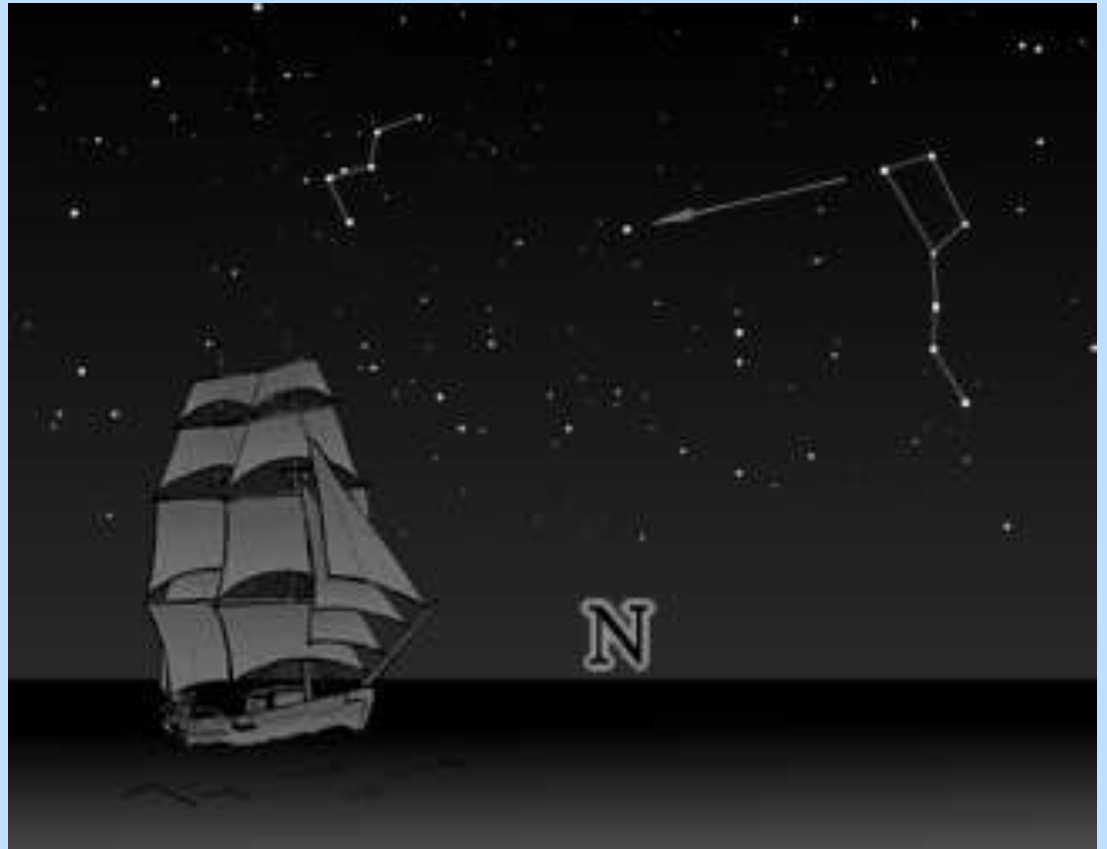
Prehistoric Times: Climb a Mountain

Anyone who climbed even a small mountain could see quite clearly that the world curves away on all sides. As a result they assumed it was shaped like a hemisphere, with their own location near the top.



Prehistoric Times: Sailors...

Sailors have always known that if they travelled north or south, the stars changed position. They “moved” southward in the sky as the ship went north and northward as the ship went south. So ancient sailors knew the world was round.



Prehistoric Times... and Ships

As people on the beach watched a ship sail away, they noticed that the boat of the ship disappeared over the horizon before the sails. So these ancient people knew the earth's surface was curved.



Ancient Astronomers, 1000 B.C.

When did people start to think the world was a sphere – not just half of one?

We don't know. But the Ancient Babylonians perceived “Heaven and Earth” as a revolving circular arrangement. They had probably worked out that the Earth was a sphere by 1,000 B.C.



Isaiah, 700 B.C.

He sits enthroned
above the
circle of the Earth.

(Isaiah 40:22)

Isaiah (c.780–c.695 B.C.) might have known from Persian astronomers that the earth was a sphere. But the word “circle” can also mean “disc,” or it might simply be a poetic way of saying “curve”.



Thales of Miletus, 585 B.C.

The Greeks knew the Earth was round in the sixth century B.C.

The mathematician **Thales of Miletus** (624–546 B.C.) must have had a rough idea of the Earth's shape because he was able to predict an eclipse of the sun in 585 B.C.



Anaximander of Miletus, 550 B.C.

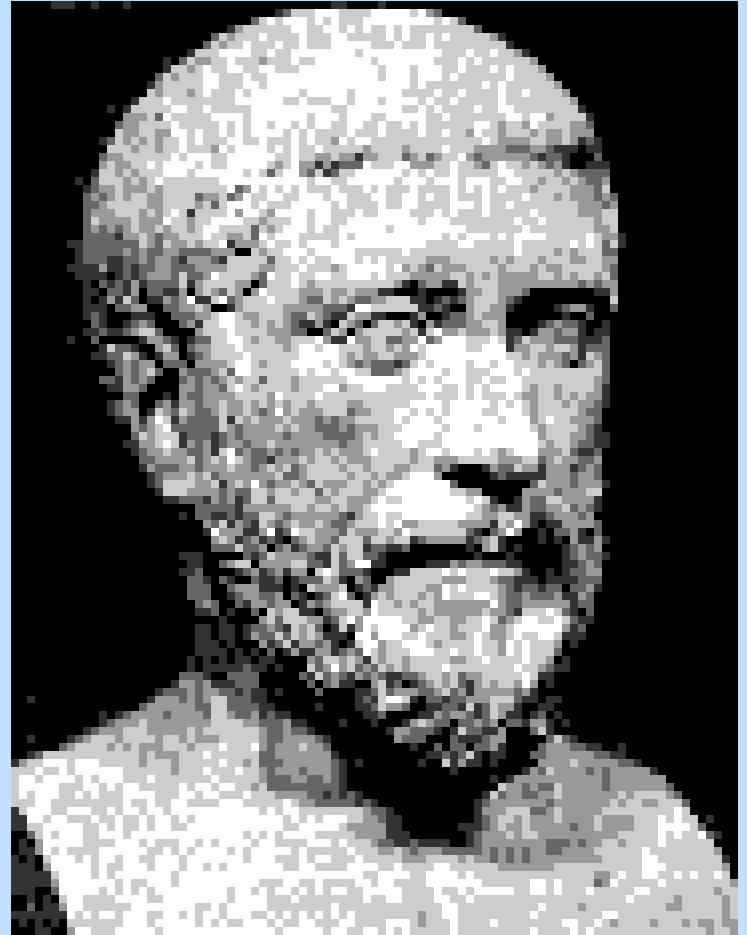
Thales' pupil **Anaximander** (610–546 B.C.) was one of the first Westerners to draw a map of the world. He thought it was shaped like a cylinder, with its height one third of its diameter.



Pythagoras of Samos, 500 B.C.

We do not know the name of the person who first had the idea of a round Earth. However, it was at this period that Greek astronomers concluded that all the planets, including Earth, were really spheres.

The students of **Pythagoras** (572–495 B.C.) certainly believed the world was round.



Eratosthenes of Cyrene, 230 B.C.

Three hundred years later, the librarian **Eratosthenes of Cyrene** (276–194 B.C.) was the first person to calculate the circumference of the Earth.

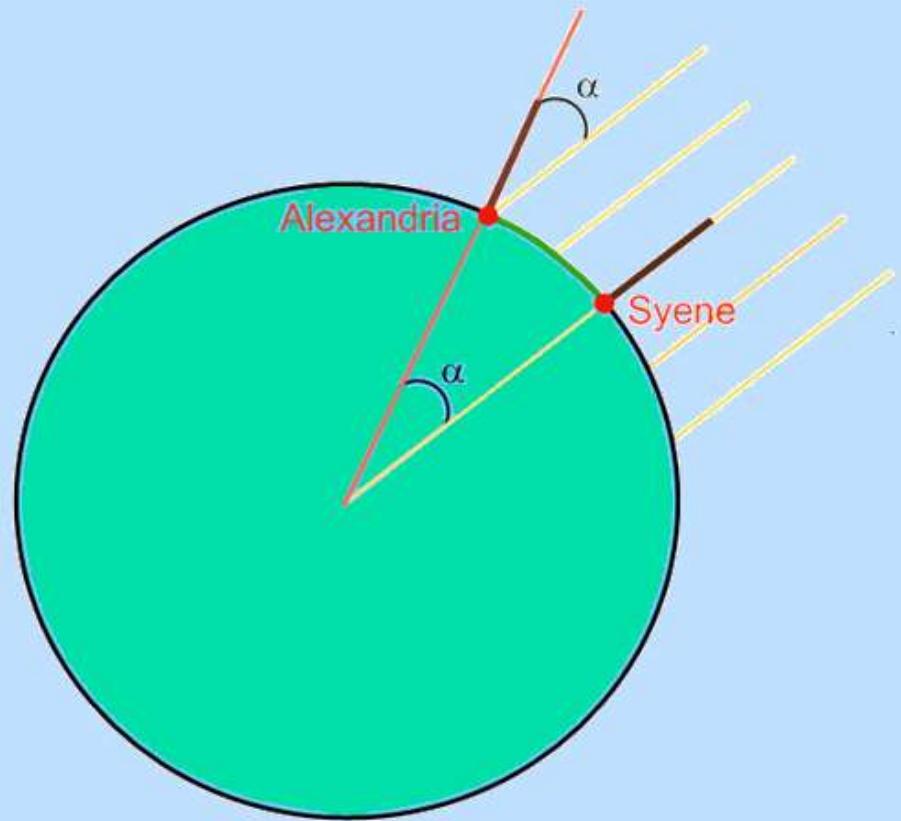
Obviously, only a circle can have a circumference. Eratosthenes had the idea of measuring the circumference because everyone already knew that the Earth was round.



Eratosthenes of Cyrene, 230 B.C.

He knew that in Syene, 800 km south of his home in Alexandria, there was no shadow at noon on 21 June.

So on that day, he measured the shadows in Alexandria at noon. He could then calculate the sun's angle of elevation – it was just over 7° .



Eratosthenes of Cyrene, 230 B.C.

Since a full circle is 360° , he concluded that the distance from Alexandria to Syene must be $7/360$ of the earth's circumference, or about one-fiftieth. So the circumference of the Earth must be fifty times the distance from Alexandria to Syene, or 40,000 km.

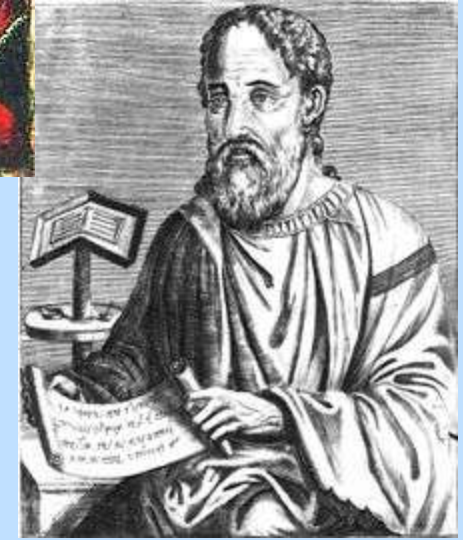
This is pretty well correct!



Early Christians, 200–300 A.D.

The Christian scholars read the Greek writings and so they knew the Earth was a sphere.

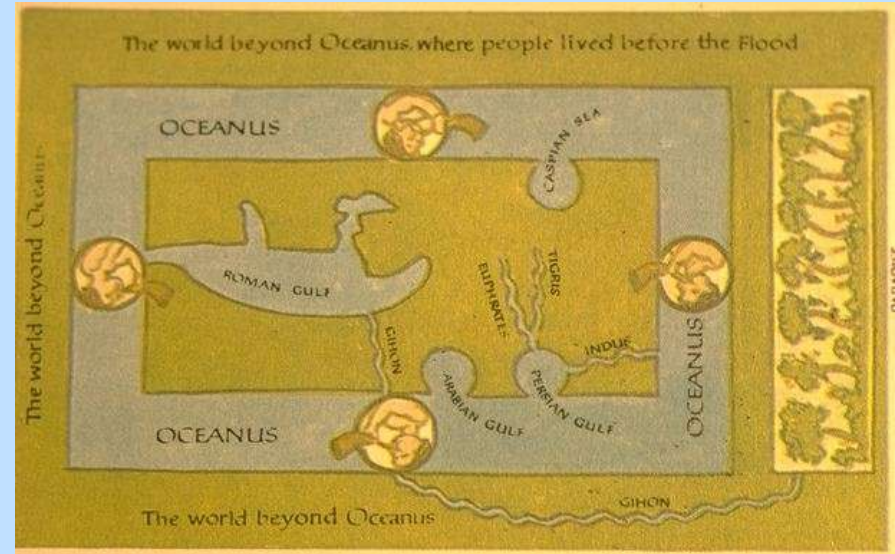
For example, **Clement of Alexandria** (150–215 A.D.) calls the world “this ordered sphere.” **Eusebius of Caesarea** (263–339 A.D.) refers to “this terrestrial globe.”



Cosmas Indicopleustes, 540 A.D.

There were a few exceptions. In the early sixth century, a Christian sailor called **Cosmas Indicopleustes** claimed the Earth was both square and flat.

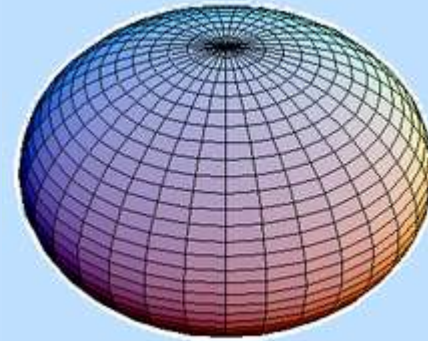
Educated Christians did not take him seriously.



Mohammed, 620 A.D.

And Allah has made
the earth
egg-shaped for you.
(Qur'an 79:30)

Other translations of this *ayat* are possible. However, by the time of Mohammed (570–632 A.D.), the Round Earth was not news – everyone knew about it. It's not surprising that it was mentioned in the Qur'an!



Abu Rayhan Biruni, 1000 A.D.

In the eleventh century, the Persian **Abu Rayhan Biruni** calculated the radius of the Earth. He found it to be 6,340 km, roughly the same answer as Eratosthenes'. (Since the earth is not a perfect sphere, any answer between 6,353 km and 6,384 km is correct.)



Empirical Evidence, 1522 A.D.

When Ferdinand Magellan sailed from Seville in 1519, people had known for 2,000 years that the earth was round.

They sailed west... and sailed west... and sailed west...

Three years later, the eighteen seamen who had survived the horrific voyage struggled back to Spain. They had sailed around the whole world. They had *proved* it was round.



Empirical Evidence, 1522 A.D.

So you could say that the roundness of the earth was not **proved** until 1522.

However, as you know by now, it would be quite wrong to claim that people did not know the correct shape of the Earth before Magellan!



What about Christopher Columbus?

You may have heard the fairy-tale that “Everyone laughed at Christopher Columbus in 1492 because he believed the world was round.”

Not true!

They laughed at Christopher Columbus because he believed India was only 3,000 miles west of Spain. Educated people tried to tell him that India was much farther away than that, but he refused to listen.



The Flat Earth Myth, 1874 and 1896 A.D.

The myth that medieval people believed in a flat Earth was invented by **John Draper** (1811–1882) and **Andrew Dickson White** (1832–1918). They wrote fake history-books claiming that Christianity taught the Earth was flat, but Christopher Columbus bravely stood up to the ignorant churchmen.

Draper and White did not produce any evidence for this strange version of history. Modern historians do not take them seriously.



Samuel Shenton, 1956 A.D.

Is there anyone alive today who believes the Earth is flat?

Perhaps. Samuel Shenton founded **The International Flat Earth Society** in 1956. This group promotes the idea that the world is flat.

But do they *really* believe it? Or are they just using an absurd proposition to practise their debating skills?

