

AIM | How old is the idea of the 22 | atom?

More than 2000 years ago in Greece, there lived a kind of scientist named Democritus [dik MOCK rih tus]. He believed that all matter is made of tiny parts. Democritus thought that these parts could not be divided or destroyed. He named them *atomos*. In Greek, *atomos* means “indivisible.”

Other people thought he was wrong. They had other ideas about matter. But nobody could prove anything.

Soon after the year 1800, an Englishman named John Dalton described his ideas about matter. These ideas formed a theory based on many observations. This theory became the basis of our modern atomic theory.

1. All elements are made of tiny particles called atoms.
2. Atoms of a given element are alike.
3. Atoms of different elements are different.
4. Chemical changes take place when atoms link up or separate with one another.
5. Atoms are not created or destroyed by chemical changes.

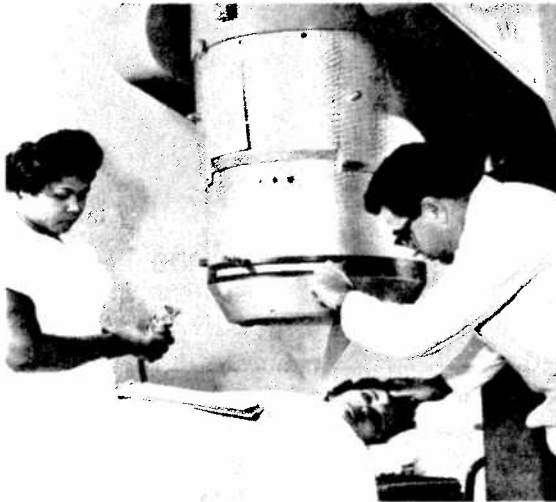
Dalton had some proof for his theory. He gave us some ideas about the atom.

Democritus was on the right track. But he was wrong when he said that the atom could not be divided. It can be. When an atom is divided or “split,” matter changes to energy. A great deal of energy is given off. That is the fact behind the atom bomb.

ABOUT ATOMIC ENERGY



A.



B.



C.

This plant makes electricity by using atomic energy.

Today, only about 9% of the electricity we use in the United States comes from atomic energy.

More and more electricity in the future will be made from atomic energy. The main reason for this is that our supplies of other fuels are running out.

Fuels give us energy.

Uranium is an atomic fuel.

A piece of uranium the size of a golf ball can supply the same amount of energy as 1,361 metric tons (3,000,000 pounds) of coal.

All fuels give off pollution.

1. Take a guess! One kind of pollution that atomic fuel does not give off is:
 - a) smoke
 - b) heat
 - c) dangerous rays _____

Certain atoms are used to treat some diseases.

2. Which of these illnesses can sometimes be treated with rays from the atom?
 - a) colds
 - b) cancer
 - c) chicken pox _____

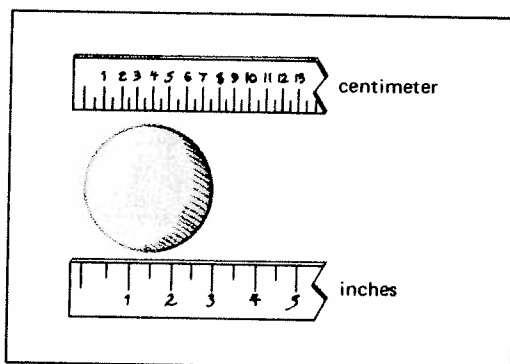
Albert Einstein (1879-1955) was a famous man of science. He helped us to understand atomic energy.



The NS Savannah was the world's first cargo ship to run on atomic energy.

The Savannah could travel 484,000 kilometers (300,000 miles) on only 59 kilograms (130 pounds) of atomic fuel. This distance is equal to 12 trips around the world at the equator.

A ship using oil would use 90,000 metric tons (200,000,000 pounds) of oil to travel the same distance.



60 kilograms (132.3 pounds) of atomic fuel is the size of a ball that is 7.7 centimeters (about 3 inches) across.

Ninety thousand metric tons of oil . . .

is equal in weight to ten Savannahs.

is enough oil to fill six classrooms.

COMPLETING SENTENCES Complete the sentences with the choices below.

fuel	John Dalton	atoms
seen	Albert Einstein	indivisible
energy	peaceful	small
Democritus	2000	divided or destroyed

1. The atom was first thought of by a man named _____ more than _____ years ago.
2. In Greek, the word *atomos* means _____.
3. Matter that is indivisible cannot be _____.
4. An English scientist named _____ presented a modern atomic theory.
5. All elements are made of _____.
6. Uranium is an atomic _____.
7. _____ was a famous man of science who helped us to understand atomic energy.
8. When an atom splits, it gives off _____.
9. The atom cannot be _____ because it is so _____.
10. It is hoped that the power of the atom will be used only for _____ purposes.

MATCHING Match the two lists. Write the correct letter on the line next to each number.

-
- | | |
|---------------------|-------------------------------------|
| 1. _____ Democritus | a) modern scientist |
| 2. _____ energy | b) named the atom |
| 3. _____ Einstein | c) given off when the atom "splits" |
| 4. _____ atomos | d) English scientist, about 1800 |
| 5. _____ Dalton | e) Greek word for "indivisible" |

CHOOSE ONE Choose the correct word or term for each statement. Write your choice in the space.

1. The man who first thought of the atom was _____.
Einstein, Democritus
2. The first man to think of the atom was _____.
a Greek, an American
3. In the word "indivisible," "in" means _____.
inside, not
4. Something indivisible cannot be _____.
pledged, divided
5. Democritus thought that the atom _____ be divided.
can, cannot
6. John Dalton believed that the atoms of an element are _____.
alike, different
7. The atom bomb shows that the atom _____ divisible.
is, is not
8. When an atom is "split" it gives off _____.
symbols, energy
9. The power of the atom was first used in _____.
peace, war
10. The power of the atom can _____.
only destroy, destroy or help

