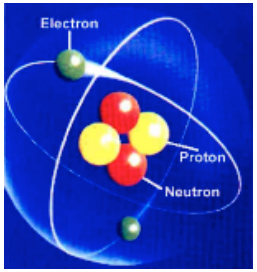

As research progressed over the last half of last century it became clear that some of these particles were themselves made of smaller bits.

So far it has not been possible to split up an electron - that is still thought of a one of the fundamental particles.

We currently think that there are two types of fundamental particles - **quarks and leptons**

Quarks and leptons

The Fizzics Organisation

The quark seems to be one of the basic constituents of matter. Six types have been identified but two are particularly common. The six types are quaintly known as known as **flavours**: up, down, charm, strange, top, and bottom. (I suppose they had to be called something). The **up and down** varieties survive in large quantities forming **protons and neutrons**.

The other four have brief life spans as do the particles they form.

In addition **every quark has an antiparticle** - a sort of mirror image with the same mass but an opposite charge. In total there are therefore 12 quarks.

Up **u**	Down **d**
Charm **c**	Strange **s**
Top **t**	Bottom **b**
charge + $^{2}/_{3}$	charge - $^{1}/_{3}$

Three types or "flavours" of lepton (or six, if you count the corresponding neutrinos separately or twelve if you count antiparticles!) have been identified:

- the **electron**,
- the **muon**,
- the **tau lepton or tau**

Each flavor consists of a pair of particles called a **"weak doublet"**. One of this pair is a relatively massive and charged particle that has the same name as its flavor (such as the electron).
The other is a neutral particle of very tiny mass called a neutrino (for example the electron neutrino).

And of course there are corresponding antimatter leptons and netrinos.

The **antimatter electron** has a special name - the **positron.**

The electron and the positron are stable (unless they meet of course) as are all the neutrinos.

Hadrons are all made of of quarks, again split into two into two groups:

- **The baryons** are the family of subatomic particles all of which are made of three quarks. The family notably includes protons and neutrons, which make up the atomic nucleus, but many other unstable baryons exist as well.
- **Mesons,** made up of a quark and an antiquark pair.

Note- if a particle meets its' antimatter mirror image then they mutually destruct producing energy.