Wave-Particle Duality:
In science we use models to explain the unseen in terms of things that we understand.

Light is not a wave and it is not a particle; it is some kind of combination of the two that we cannot model or visualize.

To understand light, we must use the particle model or the wave model, depending on the experiment to be explained, but not both.

Light as a Wave:

Behaviour of long wavelengths - it is almost impossible to measure a single quanta of radio waves

Interference - Young's double slit interference pattern

Diffraction - Light will bend around sharp edges.

Light as a Particle:

Behaviour of short wavelengths - it is hard to observe diffraction in gamma rays

Photoelectric Effect - "quanta" or bundles of energy

Compton Effect - Light has momentum

Line spectra - Light from an excited gas will only display certain bright lines, not a "rainbow"

Blackbody Radiation - The observed results only work if we assume light travels in quanta **more detail here*

http://www.youtube.com/watch?v=DfPeprQ7oGc

"I don't like it, and I'm sorry I ever had anything to do with it."
- Erwin Shrodinger, speaking about quantum mechanics

A **blackbody** is any object above 0° K which radiates photons of light.

Much of a person's energy is radiated away in the form of infrared energy. Some materials are transparent to infrared light, while opaque to visible light (note the plastic bag). Other materials are transparent to visible light, while opaque or reflective to the infrared (note the man's glasses).