

B IS FOR BANG

When I first had the crazy idea of writing a song about science for each letter of the alphabet, I wrote to all the scientists who'd helped me on previous projects, and asked them to claim a letter of the alphabet for 'their song'. Professor Mark Hindmarsh, lecturer in Theoretical Physics at the University of Sussex, was the first to reply:

Hi John

B is for Bang. The Big One, and lots of smaller ones besides! Sounds like great fun, count me in.
Mark

I initially tried to write a song that includes "lots of" bangs, as Mark had suggested, but eventually realised that three bangs was plenty. But which three? So many things go bang that it's hard to be sure which would be best for my song. I soon decided that all three of my bangs had to be record-setting bangs, and that's why the first is the biggest man-made bang, the second is the biggest bang mankind has ever seen, and the third is, as Mark called it, "The Big One".

There is an interesting debate that I wrote about in an early version of the song, but didn't make it into the final thing: it is arguable that the Big Bang wasn't really a bang at all! If a bang is an explosion, then it needs something to explode into (usually the air or water surrounding it), but the Big Bang didn't happen *in* anything – it *was everything*. It certainly wouldn't have made a 'bang' sound, since sounds travel through air (or water), and there wasn't any. Also, the Big Bang was absolutely tiny. All round, 'Big Bang' was a very bad name to give it. (One reason it was given such a bad name may be because the person who first called it that – a man called Fred Hoyle – didn't actually believe in it, and deliberately gave it a name that he thought sounded as silly as the theory itself.)

DETONATION: usually means a bang that was started deliberately, for example a bomb; technically means a bang caused by the very fast burning of an unstable substance, resulting in a shock wave.

MEGATON: one megaton is the energy you get from exploding one million tons of TNT.

THERMONUCLEAR WARHEAD: a bomb that uses fusion energy (see my 'F' song for more information on fusion).

GAMMA RAY: a type of invisible, high energy light with an extremely short wavelength.

GAMMA-RAY BURST: a specific type of supernova (see below), in which gamma rays are released.

FERMI SPACE OBSERVATORY (properly called the 'Fermi Gamma-ray Space Telescope'): a satellite currently orbiting the Earth, which has equipment on it specially designed for measuring gamma-ray bursts.

BIG BANG: the way scientists currently think that the Universe began, 13.7 billion years ago.

COLD WAR: not really a war at all, rather a long period of political tension (roughly 1947-1991) between the USA and the Soviet Union (a country that doesn't exist any more, but most of which is called Russia).

SUPERNOVA: the huge explosion that happens when a massive star dies (a galaxy like the one we're in can expect about three supernovae every thousand years).