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Heinrich Rudolf Hertz (1857 – 1894)

The German city of Hamburg has fathered two famous concepts: the hamburger sandwich better known as The Burger, and the hertz, the SI unit of frequency. Both date back to the second half of the nineteenth century, but it is the second concept that retains our attention in this bimonthly column because of the importance of frequency (symbol: f) in electronics. So who was the man who invented frequency?

Heinrich Rudolf Hertz was born in a wealthy family, his father was a barrister and at some point even Senator of Hamburg. Heinrich quickly showed a keen interest in science and languages and went to good universities. He obtained his PhD in Berlin where he studied under Hermann von Helmholtz and Gustav Kirchhoff, two scientific heavyweights well known to electronics engineers. Heinrich

did not invent frequency, of course. He started to work on electromagnetism when Helmholtz suggested that he had a shot at proving Maxwell's theory. Although initially he did not think it was feasible he returned to the subject years later when he accidentally invented the tools that made it possible. With Maxwell's theory proven he let it rest as he did not think that there would be much use for it.

Not a one-trick pony, Heinrich also laid the foundations for the current field of contact mechanics when he solved the contact problem of two elastic bodies with curved surfaces. With his observation that a charged object loses its charge faster when illuminated by ultra-violet radiation he helped to establish the photoelectric effect. His experiments even place him at the beginning of X-rays. That Heinrich lived at the edge of knowledge was proven for the last time when he died from a rare disease that was only discovered officially some 40 years later.

Although he died too young, Heinrich did manage to pass some of his genius on to his offspring, allowing his youngest daughter Mathilde to become a world-renowned biologist and psychologist. His brother's son, Gustav Ludwig, won the Nobel Prize for Physics in 1925. Comparing photos of Heinrich and his clever nephew, the resemblance is so striking that one wonders that maybe his nephew's daddy wasn't his nephew's daddy, but his nephew's daddy didn't know?

The SI unit for frequency became the hertz (Hz) in 1960 when it replaced the cycle per second (cps). One hertz is defined as 1/second or s^{-1} , exactly as the becquerel (Bq), however one hertz means one event per second with the events spaced exactly one second apart, whereas one becquerel means one event per second on average. Where Joseph Henry has a mountain range named after him, Heinrich has a crater on the dark side of the moon that carries his name. Searching the Internet I did manage to find a recipe for a Hertz burger, nicely combining the two great nineteenth century Hamburger concepts into one.

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