

This Month's Stiff: James Clerk Maxwell

Entered mortal coil: 13 June 1831

Assumed Room Temperature: 5 November 1879



Jimmy boy, wife Katherine, and unidentified dog.

The homely individual pictured above is none other than James Clerk Maxwell, father of all that we hams hold sacred. Jimmy's mathematical formulas, which had as a foundation earlier research by Faraday on electricity and magnetism, predicted the existence of electromagnetic waves, i.e. radio. These formulas are quite complex, and even I, with a full year of college calculus under my belt courtesy of a questionable institution of higher learning (after all, they DID admit me, didn't they?), have difficulty digesting them. Here are the formulas below for your enjoyment-

1. $div E = 0$

2. $div H = 0$

3. $curl E = c \times dH/dt$

4. $curl H = c \times dE/dt$

Where E = electric field strength,

H = magnetic field strength,

curl = rotation (or rate of change and vorticity),

div = divergence,

dH/dt and dE/dt are partial differentiations with respect to time.

x = multiplication

Okay, you may ask, what does all this gobbledegook mean? Simply put, a changing electric current in a conductor will set up an expanding electromagnetic field propagating outward at the speed of light (this is the foundation on how transmitters work). Conversely, an electromagnetic field intersecting a conductor will induce a varying electric current (this is the foundation on how receivers work). A few years after Jimmy's death, all of this mess was proven to be true when a particularly bright German researcher, Heinrich Hertz, demonstrated the existence of radio waves via experimental means. Our hero was vindicated!

Maxwell was not a particularly good teacher at St. Andrews University in Great Britain. Maxwell did other important work on the orbital dynamics of Saturn's rings and developed the kinetic theory of gases. Maxwell's theories on electromagnetic radiation, however, were later considered to be the greatest contribution to science in the 19th century. Jimmy died quietly in bed, at peace with himself and his Maker.

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